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THE MILLIPEDS OF HISPANIOLA,
WITH DESCRIPTIONS OF
A NEW FAMILY, NEW GENERA, AND NEW SPECIES

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WITH THREE PLATES

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No. 1. — *The Millipeds of Hispaniola, with descriptions
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By H. F. LOOMIS

INTRODUCTION.

No truly comprehensive collection of millipeds ever has been made in the island of Hispaniola, nor has the island been investigated by collectors primarily interested in these creatures, and consequently the milliped fauna is very poorly known. Until visited in 1912 by Dr. Wm. M. Mann, no systematic collecting had been done, and only nine species were reported from the entire island. The Mann collection included 31 species, of which 25 were described as new by R. V. Chamberlin,¹ and was made entirely in the Republic of Haiti, centering about Port-au-Prince, with journeys to Jacmel on the south coast, and to Cape Haitien on the north coast.

A large number of millipeds was accumulated by Dr. O. F. Cook and the writer on various trips to the island, extending from 1917 to 1934, nearly all the territory explored being in the Republic of Haiti and not varying greatly from that visited by Dr. Mann, hence much of the terminal portion of the Southern and of the Northern peninsula, and the eastern frontier of the Republic, was not searched for millipeds. This collection and two others from the Museum of Comparative Zoölogy, Cambridge, Massachusetts, form the basis of this paper. Both of these latter collections were of particular interest as the material they contained came mainly from territory not previously collected in and many new forms were included. The first of the collections was made in Haiti and Santo Domingo by Dr. T. Barbour and his family, while guests of Mr. Allison V. Armour on his Research Yacht "Utowana," from March to May, 1934. The second collection came from the mountain ranges of La Selle and La Hotte in Southern Haiti, and was made by Dr. P. J. Darlington in the autumn of 1934.

The rather definite localization of the species, as shown by Dr. Mann's collection and those here studied, gives assurance of a considerable number of additional forms being found in the Republic of Haiti, and since Santo Domingo is almost wholly unexplored, a still greater number of species undoubtedly await discovery there. With these new forms in prospect it may be predicted that the island of Hispaniola probably contains as many or more species of millipeds than any other area of like size, at least in the Western Hemisphere.

¹ Bull. Mus. Comp. Zoöl., 62, no. 5, pp. 151-262, 1918.

The abundance of milliped species is accounted for when the physical aspects of Hispaniola are considered. High mountains, deep valleys, broad plains, and varying temperatures and rainfall combine to give the island an almost complete range of living conditions of the kind in which humus animals may dwell. Tropical lowlands adjoin arid deserts or grassy plains, and the mountains are in close proximity to all and offer habitats such as are associated with the temperate rather than the tropical zone. Certain sets of favorable environmental conditions may be repeated in separate localities and evolutionary changes in the different localities in time would account for a larger number of species than in a widespread fauna where little or no isolation occurred. Such an explanation seems logical for the relatively numerous species in some of the Hispaniolan genera of millipeds, such as *Prostemmiulus* and *Cyclodesmus*, and doubtless should be extended to include the many indigenous genera.

Because of the varied physiographic characters of Hispaniola, and the abundant humus fauna, interesting studies of the distribution and evolution of the millipeds will become increasingly possible as the systematic work on the group progresses. Few other groups of insects, animals or plants offer similar opportunities for these studies in such a small area as that presented by this island, and from this standpoint it probably is the most important link in the chain of islands extending between South America and the United States.

Among the especially interesting features of the present collection may be mentioned an unusual new family, the *Eoromidae*, erected for a creature with raised, somewhat wing-like lateral carinae, unlike anything previously known in the order to which it belongs.

Species of three genera, *Cyclodesmus*, *Prostemmiulus* and *Microspirobolus*, were found to be remarkably plentiful, and it is certain that many new species await discovery. Such examples indicate the antiquity of the milliped fauna, and the possibility that the island may have been a principal center of distribution to other islands is suggested.

A new species of *Rhinoericus*, the largest ever described, was found on the Southern Peninsula. In collecting this giant milliped, it was discovered to have the unusual ability of ejecting its repugnatorial secretion far from the sides of the body, and on turning up one of the specimens from the forest leaf-litter, the writer was painfully injured by this fluid being shot upward into his face; the first known injury of a serious nature to man by a milliped.

These collections as a whole are remarkable in two major particulars: (1) they more than treble the number of millipeds previously known

from Hispaniola; and (2) it is thought that the 78 species added to the island's fauna were, with one exception, previously unknown to science.¹ In few other branches of the animal kingdom may such a wealth of new material be found, and as the status of the Hispaniolan millipeds is typical of that in many other parts of the world, it well illustrates the great amount of systematic work that must be done before our knowledge of this group is at all comparable to that in most other branches of invertebrate zoölogy.

An interesting comparison may be made between Hispaniola's milliped and butterfly faunas. As previously mentioned, milliped collecting in Hispaniola has but begun, and by far the greatest part of the island remains to be searched. Quite in contrast, the butterflies are well known and surprisingly few in number, as only about 140 species have been reported, and the proportion of undiscovered species is believed to be relatively small. At the present time 113 millipeds are known, and observations on the localized distribution of many of them indicate that when the island has been as thoroughly searched for millipeds as it has been for Lepidoptera, the millipeds probably will decidedly outnumber the butterflies, a remarkable condition indeed, and one not recognized for any other region, so far as the writer knows, although more extensive collecting in Cuba may show a similar condition to exist there.²

The present paper is but a beginning toward classifying the millipeds to be found in Hispaniola as so small a part of the island has been searched for these creatures, but to facilitate future work on the group the paper has been written in semi-monographic style, including keys to the orders, families, genera, and species, in addition to the descriptions of the new material. In several cases new descriptions or notes pertaining to previously known species have been included where the original or subsequent descriptions do not allow easy comparisons to be made with related species.

Since practically all the millipeds dealt with in this paper are from the Republic of Haiti, the locality citations in the following pages are understood as referring to that portion of the island, unless the Dominican Republic is specifically mentioned.

Much of the material studied is the property of the United States

¹ In the collection made by O. F. Cook and the writer are several species which first were found in Haiti and later in other West Indian islands by the writer while a member of the A. V. Armour Expedition in 1932. These species were described in the *Smithsonian Miscellaneous Collections*, 89, no. 14, 1934, but are here considered as part of the new material added to the Hispaniolan fauna by the collection.

² The above information on the butterflies of Hispaniola was given the writer by Dr. Marston Bates, of the Museum of Comparative Zoölogy, Cambridge, Mass.

National Museum and the type specimens in this material are deposited there, but where paratype specimens are available, they have been deposited in the Museum of Comparative Zoölogy. In all other material the type and paratype specimens are deposited in the latter institution.

Class DIPLOPODA

The class *Diplopoda* is divided into two subclasses, of which the first, the *Pselaphognatha*, is characterized by having the body without external chitinous armor, the soft skin being beset with toothed and barbed bristles in definite dense clusters and rows, the clusters especially prominent on the sides and back end of the body; the anus is located in the penultimate segment. In the *Chilognatha* the body is protected by definite chitinous armor, and when bristles are present they are not in dense clusters along the sides or at the back end of the body, and the anus is in the last segment.

Subclass PSELAPHOGNATHA

This subclass contains relatively few species as compared to the *Chilognatha*, in which the majority of millipeds belong. The species are small and very active and are most often found in partly dry leaf-litter or other vegetable debris in protected locations. Because of the ease with which the bristles rub off, the collection and preservation of specimens in a satisfactory condition are difficult matters.

The existing species are included in a single order of which but two species have thus far been recognized in Hispaniola.¹

Order ANCYROTRICHA

Family POLYXENIDAE

LOPHOPROCTUS Pocock

LOPHOPROCTUS NIVEUS Loomis

Lophoproctus niveus Loomis, Smithsonian Misc. Coll., **89**, pp. 5, 6, 1934.

The type locality is Beata Island, off the south coast of Hispaniola. Several badly rubbed specimens, appearing to be this species, although slightly darker in color, were collected at Kenscoff, June 24, 1934 by E. M. and H. F. Loomis.

¹ The best method of preserving thus far tried is to place single specimens in tiny glass vials requiring but a few drops of 70 per cent alcohol to completely fill the vial. A tiny cork stopper is inserted in such a way that all air is excluded, so that no active shaking of the specimen takes place, due to movement of air back and forth in the vial during handling or transportation. These tiny vials are stored in larger vials filled with similar alcohol.

LOPHOPROCTUS AEQUATUS new species

Four females collected at Petite Riviere de Artibonite, July 6, 1927, C. & L.¹
Type in U. S. N. M. Paratype in M. C. Z.

Diagnosis. This is a smaller, darker species than *L. niveus*; the antennal joints are of different proportions; and the terminal pencil of hairs is smaller and shorter.

Description. Maximum length 2.5 mm., including the terminal pencil of hairs; width .7 mm.

Color darker than in *L. niveus*.

Head with the setae arranged as in *L. comans* and *L. niveus*. Labrum with the median notch small. Antennae with the joints more nearly subequal in length than in the other species. (Fig. 1.)



Fig. 1. *Lophoproctus aequatus*. Antenna.

First segment with 2 large, submedian, transversely oval clusters of clavate, barbed setae, and obliquely outward in front of each cluster is a smaller oval area containing equally long hairs close to the anterior margin.

Second segment with the lateral prominence at each anterior corner not noticeable produced forward but projecting nearly straight outward. Vestiture of this segment and those which follow as in *L. niveus*.

Last segment with a small, slender pencil of parallel hairs which are not as long as the hairs of the lateral prominences on the preceding segment. There seems to be no secondary cluster of hairs below the pencil as in *L. niveus*.

Legs with the spine at the ventral third of the last joint larger than the terminal claw.

¹ In locality citations the names of O. F. Cook and the writer have been abbreviated to the initials of the last names.

Subclass CHILOGNATHA

Six of the nine recognized orders of this subclass have been found in Hispaniola. Characters for the separation of the orders are given in the following key.

Key to the orders of Chilognatha in Hispaniola

- Segments open underneath, the arched dorsal plates not attached at the sides, the pleurae and pedigerous laminae free; legs of segment 7 normal, those at the posterior end of the body modified in the male for copulatory purposes. . . . *Limacomorpha*
- Segments closed underneath, the dorsal plates joined at the sides to the pleurae or completely fused; legs of segment 7 of the males modified for copulatory purposes; posterior legs normal.
- Number of segments 18, 19, or 20; each a complete ring, the pleurae and pedigerous laminae completely fused and with the sutures obliterated; only the anterior pair of legs of segment 7 modified as gonopods *Merocheta*
- Number of segments more than 20; pedigerous laminae distinct, free or united by evident sutures; posterior pair of legs of segment 7 specialized as gonopods, and usually both pairs so modified.
- Head very small, with a pointed snout or beak, the mouthparts poorly developed; body convex above, flattened beneath, with large pleurae joined to the dorsal plates at the lateral angle; eight pairs of legs in front of the gonopods. *Colobognatha*
- Head and mouthparts well developed; body not flattened below, nearly cylindrical; seven pairs of legs in front of the gonopods.
- Segments 4 and 5 with one pair of legs each; clypeus with a median suture. *Anocheta*
- Segment 4 without legs, segment 5 with two pairs; clypeus without a median suture.
- Body laterally compressed; segments rather thin and fragile, with a distinct median suture and sculptured with fine, oblique striations; pedigerous laminae free. *Monocheta*
- Body cylindrical; the segments hard and firm, with no median groove or suture; striations longitudinal on the posterior subsegments; pedigerous laminae united on the sides by a suture. *Diplocheta*

Order LIMACOMORPHA

Family GLOMERIDESMIDAE

GLOMERIDESMUS Gervais & Gould

After examination of the two Hispaniolan species which have been referred to this genus the possibility is suggested that the characters given by Pocock¹ for the separation of the East Indian *Zephroniodesmus* from the tropical American *Glomeridesmus* may have been poorly chosen. Neither of the Hispaniolan species has the antennal sockets open behind, although a deep depression, extending downward from the posterior border of each socket to the margin of the head, might give that impression. While specimens of *Zephroniodesmus* were not examined, it was observed that the antennae of *C. concolor* are quite close together at the base, while those of *G. jenkinsi* are considerably more separated, from which it appears that this character is of more specific than generic value.

A condition not heretofore reported for this family is found in *G. jenkinsi*, the females of which all have 21 segments, instead of 20 as in the male, thus increasing the maximum number of segments for the family by one. In Pocock's description of the family (loc. cit.) he states that the body consists "of 19-20 segments" but does not say that the different number of segments is dependent on the sex of the animal, but there is the unique possibility of this being so, although the single definitely known case, just mentioned for *G. jenkinsi*, may not be considered sufficient grounds for such a generalization.

GLOMERIDESMUS CONCOLOR Chamberlin

Glomeridesmus concolor Chamberlin, Bull. Mus. Comp. Zool., **62**, No. 5, p. 172, 1918. Two female specimens collected at Fond des Negre, June 28, 1927. C. & L.

They are colorless in alcohol. The length of these specimens, which appear to be fully mature, is 3.5. mm. but there do not appear to be other sufficient differences between them and *G. concolor*, which came from Jacmel, to justify another name. The smallest specimen of *G. concolor* Chamberlin reported was 4 mm. long.

¹ Contributions to our knowledge of the Arthropod Fauna of the West Indies. Jour. Linn. Soc., **24**, No. 157, p. 475-477, 1894.

GLOMERIDESMUS JENKINSI new species

One male type and 6 females collected at Le Borgne, March 26, 1930, by W. H. Jenkins and C. A female collected on Morne Pilboreau, March 28, 1926, C. Type in U. S. N. M. Paratype in M. C. Z.

Diagnosis. This is the only species with the pit behind each antenna triangular in outline, it being nearly circular in the other known species.

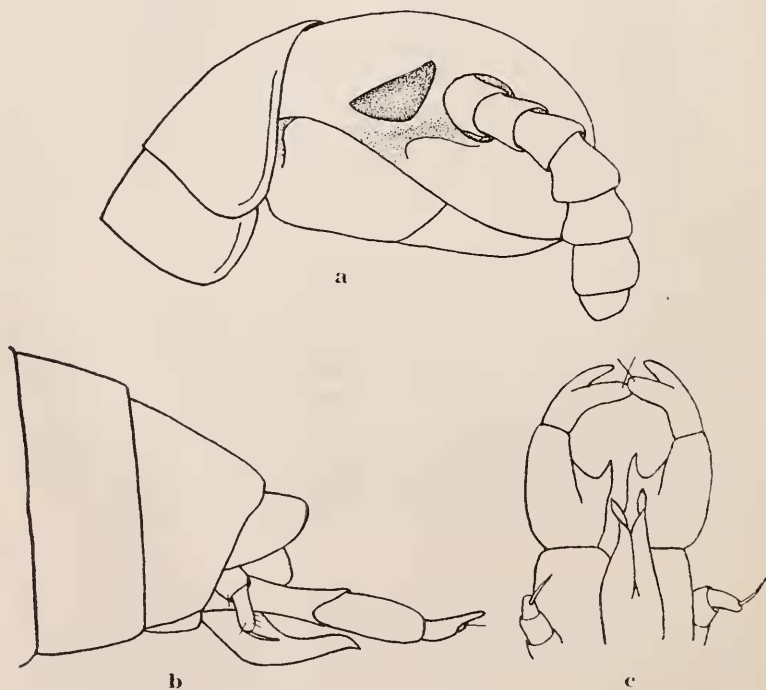


Fig. 2. *Glomeridesmus jenkinsi*. a, Oblique lateral view of head and segments 1 & 2; b, Lateral view of segments 18, 19, & 20, showing the last legs and gonopods; c, Ventral view of the gonopods and terminal joints of the last legs.

Description. Length of the male type 4 mm., width .8 mm., largest female 5 mm. long. The male has 20 segments but all the females have 21 segments.

Color in alcohol rather dark but this at least partly caused by the colored internal structure. Head light gunmetal, maculate with uncolored areas.

Head with the pit behind each antenna very definitely triangular, its upper side longest and the two lower sides subequal (Fig. 2, a). Antennae quite widely separated, much more than in specimens of *G. concolor*; the sockets not open behind, as given for *G. marmoreus* Pocock, but each socket is followed by a deep channel which passes below the pit to the lower margin of the head; the same condition was observed in specimens identified as *G. concolor*.

Surface of the segments strongly shining, the dorsal striae 3 or 4 in number and fainter than those in *G. concolor*.

Caudal segments with the posterior angles not in the least produced; those of the antepenultimate segment forming nearly right angles, and those of the penultimate segment much more obtuse. Last segment not extending downward on the sides to the level of the other segments.

Pleurae with the posterior margins continuous but with a few fine setae projecting backward from the margins.

Penes not protruded. Definitely formed, jointed gonopods project backward, behind the modified last legs of the male, as shown in (Fig. 2, b & c).

Order COLOBOGNATHA

This order is represented in Hispaniola by two families, the *Siphonophoridae* and the *Polyzoniidae*; the former containing eyeless millipeds with a large number of segments and with the head produced into a slender, sharp pointed beak; the latter family is represented by a single species having few segments, 37 to 44, the head with a single large ocellus on each side, and the front of the head acutely angled but not produced into a long attenuated beak.

Family SIPHONOPHORIDAE

Two genera of this family have been found in Hispaniola; *Siphonophora* and *Siphonocybe*. In *Siphonophora* the repugnatorial pores are not borne on distinct prominences on the sides of the body as in *Siphonocybe*, which has a strong lateral projection or keel, supporting the pore, on the side of each segment. At the caudal end of the body these keels project behind the back margin of each segment.

Genus SIPHONOPHORA Brandt

The three species are separated in the following key.

Key to the Hispaniolan Species of Siphonophora

- Body slender, clothed with short, fine hairs, except on the last segment where the hairs are much longer *S. gracilior* Chamberlin
 Body stouter, dorsum with hairs of uniform length throughout
 Body broad and depressed; color brownish; dorsal hairs short; beak longer than the head but reaching only to the sixth joint of the long antennae *S. manni* Chamberlin
 Body narrower and more convex; color yellow; dorsal hairs moderately long; beak shorter than the head, decurved, antennae short and thick *S. proxima* Chamberlin

SIPHONOPHORA GRACILIOR Chamberlin

Siphonophora gracilior Chamberlin, Bull. Mus. Comp. Zoöl., **62**, no. 5, p. 173, 1918.

A small specimen of what appears to be this species was collected at Petionville, the type locality, June 17, 1927. L.

SIPHONOPHORA PROXIMA Chamberlin

Siphonophora proxima Chamberlin, Bull. Mus. Comp. Zoöl., **62**, no. 5, p. 173, 1918.

Small specimens, apparently of this species, but with a greatly reduced number of segments, were collected at the following places: Petionville, June 17, 1927. L.; Trouin, June 22, 1927; Diquini, June 26, 1927; between Leograne and Petit Goave, June 28, 1927. C. & L.

SIPHONOPHORA MANNI Chamberlin

Siphonophora manni Chamberlin, Bull. Mus. Comp. Zoöl., **62**, no. 5, p. 173, 1918.

Type locality. "Grande Riviere."

The locality probably refers to the river by that name which flows through Jacmel.

SIPHONOCYBE Pocock

A new member of this genus has been found in Haiti and is described below. The only other species is native in Trinidad.

SIPHONOCYBE ALBA new species

Six specimens (2 males) collected near Trouin, June 22, 1927, C. & L., May 21, 1930, C., and one female from between Leogane and Petit Goave, June 28, 1927, C. & L. Several specimens from the type locality June 26, 1934, L. Type in U. S. N. M. Paratype in M. C. Z.

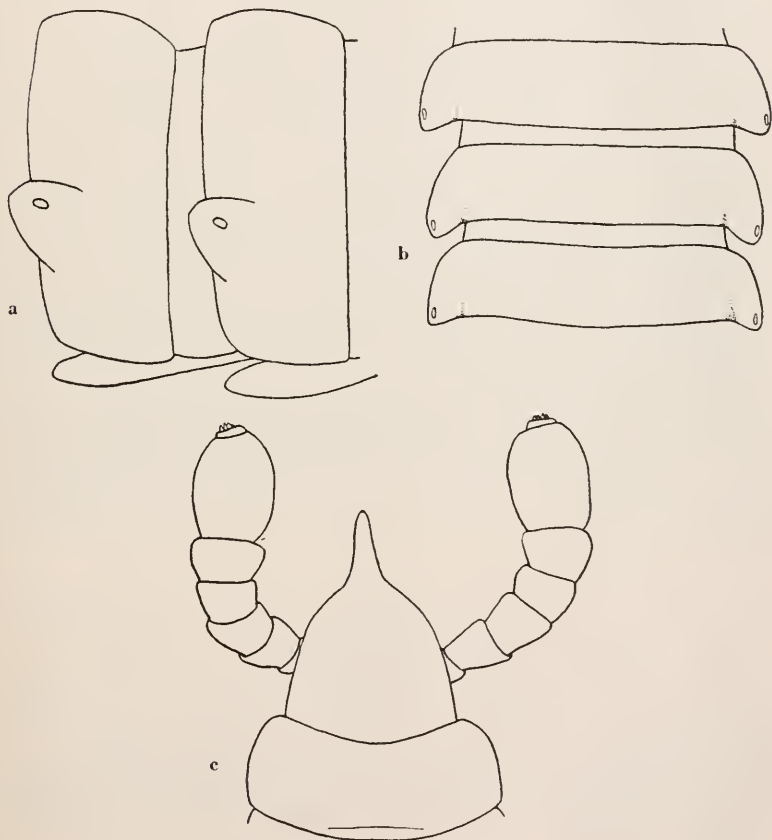


Fig. 3. *Siphonocybe alba*. *a*, Lateral view of two posterior segments; *b*, Dorsal view of three posterior segments; *c*, Dorsal view of head and first segment.

Diagnosis. This species differs from *S. harti* Pocock in being more slender, of smaller size, and with very short pubescence on the dorsum,

which could not be described as "silky." This species is white, whereas *S. harti* is buff in life, turning darker in alcohol.

Description. Body long and slender; living color transparent white without any tinge of reddish.

The largest specimen, a female, is 14 mm. long and has 61 segments.

Dorsum strongly convex and appearing almost naked, but with the last segment with a few fine hairs 10 or 12 times as long as those on the mid-body segments. Segments with a lateral poriferous carina on each side, this more conspicuous on the caudal segments where it actually projects beyond the back margin of the segments; pores borne laterally near the posterior corner of the carinae (Fig. 3, a & b).

Head long; with the antennae long, clavate, moderately compact; beak slightly decurved, shorter than the head, scarcely reaching the sixth joint of the antennae, (Fig. 3, c).

First segment half again as wide as the head at base, and about as long as the next two segments combined.

Anal valves with many long hairs crossing above the opening. Preanal scale short, broadly rounded behind, and with 6 or 8 long hairs apparently in a single transverse row.

In the male type the first 4 segments each appear to have a single pair of legs, and the next 2 segments each with 2 pairs of legs; the 2 pairs of modified gonopod legs arising from the seventh segment. Behind the gonopods there are 91 pairs of legs, the last pedigerous segment seems to have but a single pair, and this condition appears to exist in the females also.

Family POLYZONIIDAE

SIPHONOTUS Brandt

SIPHONOTUS PURPUREUS Pocock

Siphonotus purpureus Pocock, Jour. Linn. Soc. Lond., **24**, p. 479, 1894.

S. virescens Silvestri, Anal. Mus. Nac. Bs. As., **6**, p. 55, 1898.

This species collected by W. R. Mann at Cape Haitien, Ennery, and Grande Riviere. Collected at Petite Riviere de Artibonite, Plaisance and Bayeux, C. & L.

The species also has been reported from the islands of St. Vincent and Tobago. O. F. Cook and the writer have collected specimens at Belize, British Honduras, and in the Panama Canal Zone, and the writer found the species plentiful in Dominica, Guadeloupe, Martinique, Trinidad and Surinam.

Careful examination of these specimens has failed to show a single one with 2 ocelli on each side of the head, as described by Pocock, and it is apparent that his description was in error. Specimens described by Silvestri as *S. virescens* quite evidently belong to this species.

Order MONOCHETA

Family STEMMIULIDAE

PROSTEMMIULUS Silvestri

In this genus the species appear to be decidedly localized, as few have been found distributed over more than a relatively small area. The external differences of the species are few and seldom distinctive, and a single color pattern predominates, with about as much variation within each of the species as between them. Only one rather extreme modification of pattern has been found in the Hispaniolan forms and intermediates between it and the common series possibly exist. Identification of the species by external characters is difficult and final judgment should rest on the examination of the male organs, but the following key may assist in the recognition of the species.

Key to the Hispaniolan species of Prostemmiulus

- Mid-dorsal stripe not continuous on the segments but reduced to a light spot on the anterior portion of each segment *interruptus* new
- Mid-dorsal stripe usually continuous, at least on the mid-body segments
- Mid-dorsal stripe broad *venustus* new
- Mid-dorsal stripe narrow
- First segment with 2 strong striae low down on each side *clarus* Chamberlin
- First segment with 3 or 4 striae on each side
- Males with the raised pleural lobe of segment 4 produced forward and inward and hidden behind the middle of the raised inner margin of the pleura of segment 3; gonopods with the inner divisions terminating in two slender arms *abditus* new

- Males with the raised pleural lobe of segment 4 not produced forward or hidden by the pleura of segment 3; gonopods with the inner divisions broadly truncated at apex or surmounted by a single slender arm
- First segment with three striae on each side; usual number of segments apparently 42 *subulatus* new
- First segment with four striae on each side; number of segments not exceeding 41
- Males with the third legs very conspicuously swollen, the last joint clawless *clavipes* new
- Males with the third legs of normal size and with a terminal claw
- Males with the inner margin of the pleura of segment 3 definitely raised *quadristriatus* new
- Males with the inner margin of the pleura of segment 3 but slightly or not at all raised
- Body reaching a length of 18 mm. number of segments usually 41; gonopods with the inner divisions subtruncate at apex, not ending in a long slender arm *cognatus* new
- Body not exceeding 13 mm. in length; segments never more than 40 and usually less; gonopods with the inner divisions ending in a slender arm
- Pleurae of the third segment of the male with the inner margin slightly elevated, females with the posterior margin of each pleura of this segment emarginate, and the inner posterior corner a right angle; inner division of each gonopod with the basal two-thirds very thick, deeply hollowed at apex, apical third consisting of a slender arm rising from the front face of the basal portion and extending upward and inward
affinis new
- Pleurae of the third segment of the male with the inner margin almost flat; females with the posterior margin of the corresponding pleurae not emarginate, the inner posterior corners very broadly rounded; inner division of each gonopod with the basal two-thirds not especially thickened and not hollowed at the top, the apical arm more erect and continuous with the basal portion *heterops* new

PROSTEMMIULUS VENUSTUS new species

Five mature females (1 the type) collected on Morne Brigand, near Bayeux, July 16, 1927, L. Two female specimens collected on Morne Pilboreau,

above Ennery, and two other females collected at Plaisance, July 8, 1927. C. & L., appear to belong to this species. Type in U. S. N. M. Paratype in M. C. Z.

Diagnosis. The broad, light colored, median band of the body immediately distinguishes this handsome species from the other forms.

Description. Length of the largest female 18 mm. Number of segments 39 to 41.

Body moderately slender, not as strongly attenuated behind as usual, the anterior three-fourths of the body with the sides nearly parallel, scarcely at all converging behind.

Median longitudinal light stripe of the dorsum wider than in any other Hispaniolan species, light salmon-colored in the specimens in alcohol but probably pinkish in life; each side of the body with two longitudinal rows of light spots arranged as in *P. clarus*; head and first segment of four of the specimens from the type locality light in color, similar to the median band, but in the remaining specimen the head and first segment are dark; last segment with the dorsal portion light, the sides somewhat darkened; anal valves with each disc light but darkening toward the raised margin.

Groove on the vertex of the head faint but long, reaching opposite the top of the antennal sockets; ocelli strongly differentiated in size; antennae as in *P. quadristriatus*.

First segment with 3 moderately impressed lateral striations on each side.

Third segment with the posterior margin, adjacent to the legs, with a quite deep, triangular emargination, the posterior corner immediately mesad of it rather broadly, triangularly produced.

Striations beginning to extend onto the dorsum on segment 5, the dorsal striations rather weak and inconspicuous. Notch at the posterior end of the dorsal median sulcus of the segments rather deep and more conspicuous than in *P. quadristriatus* or *P. subulatus*, especially on the posterior segments.

Last segment over half as long as the penultimate segment.

Anal valves scarcely at all convex, the raised margins thin. Preanal scale broadly rounded behind.

First 3 pairs of legs with a comb of fine, short hairs on the under side of the last joint of each leg.

PROSTEMMIULUS CLARUS Chamberlin

Prostemmiulus clarus Chamberlin, Bull. Mus. Comp. Zoöl., 62, p. 176, 1918.

This species was reported from Jacmel, the type locality; Diquini; Grande Riviere; Furey; and Manneville. Several females and young males collected at Diquini, August 21, 1927, C., appear to be this species.

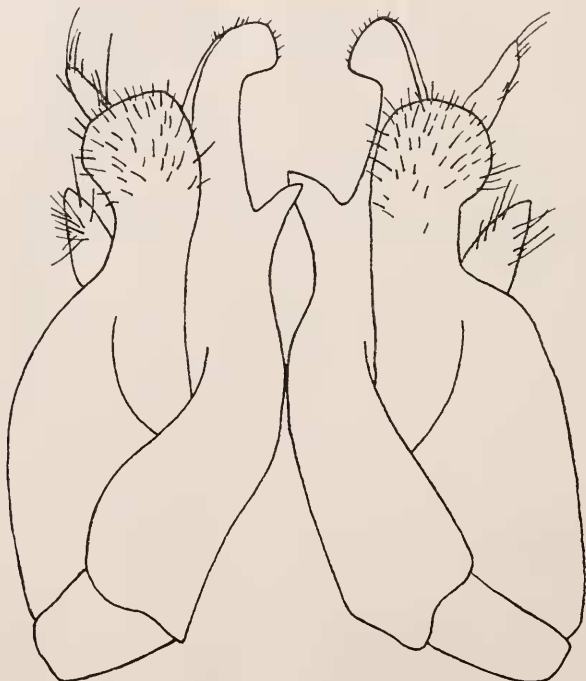


Fig. 4. *Prostemmiulus clarus*. Gonopods of paratype, anterior view.

The gonopods of Chamberlin's paratype, M. C. Z. No. 4315, are shown in figure 4.

PROSTEMMIULUS ABDITUS new species

One male (type), collected on Morne Pilboreau, above Ennery, July 8, 1927. C. & L. One male and 2 females from the same locality, May 12, 1925, C. Type in U. S. N. M. Paratype in M. C. Z.

Diagnosis. The small size of the animal, with the body tapering backward from the first three segments; the hidden mesial lobe of the pleura on each side of the fourth segment; the lack of acute serrations along the posterior lateral margin of the segments; and the peculiar gonopods, are easily recognized characters of this species.

Description. Length 10 to 12 mm., number of segments 36 to 39. Body small, very slender, quite strongly compressed laterally in the

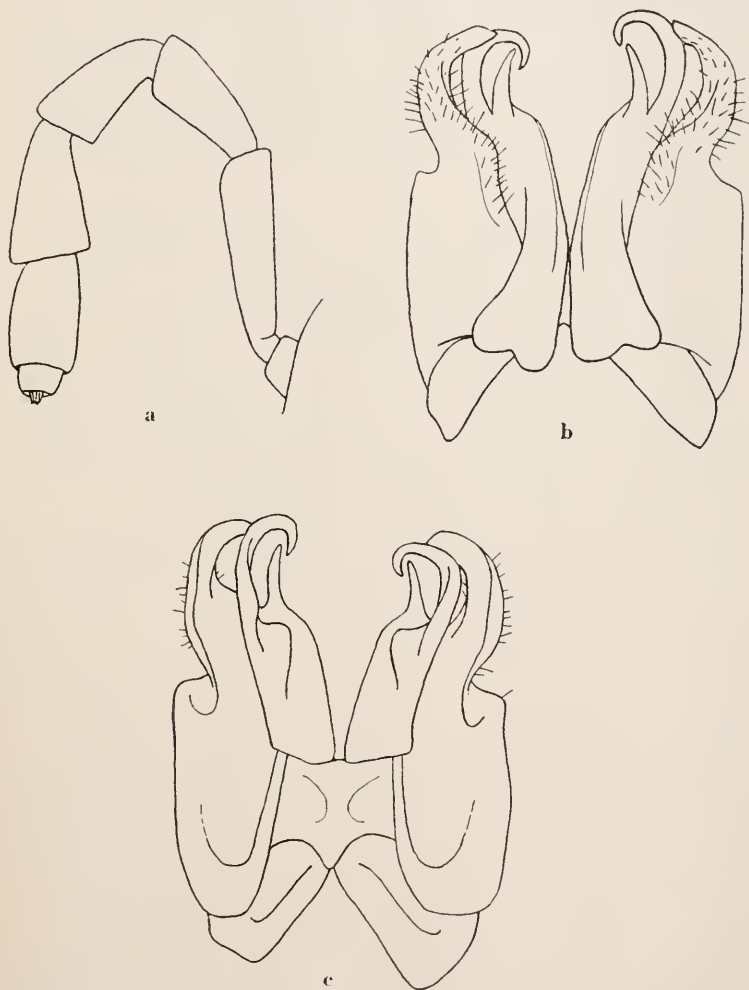


Fig. 5. *Prostemmiulus abditus*. a, Antenna; b, Gonopods, anterior view; c, Gonopods, posterior view.

male, narrowing very gradually to the posterior end from the first 3 segments which are broadest; female broadest near middle of the body.

Median light stripe narrow and continuous on the posterior segments but broader and confined to the posterior half of the segments at the front end of the body; on the side of each segment, and removed from the median line, is a very large light colored transverse area, reniform in shape with the concavity behind, the upper half of the area not solidly light colored as is the lower half; the pore is located in this area at its upper, anterior limit; on the posterior segments this colorless area is greatly reduced in size and is broken up into a few tiny spots; head, last segment, and anal valves dark colored.

Head with the lower eye small, the upper eye of moderate size; groove of the vertex short; antennae with joint 2 longest, joints 3, 4 and 5 subequal, and joint 6 almost as long as the fifth joint (Fig. 5a).

First segment with 3 definite striations on each side.

Third segment with the inner margin of the pleura on each side definitely but not suddenly raised.

Inner margin of the pleura of each side of the fourth segment strongly produced forward and inward into a long subacute lobe with its apex mesad of the middle of the raised margin of the pleura of the third segment and not as greatly elevated as it is, thus being hidden from lateral view by the pleura of the third segment.

Striations beginning to extend onto the dorsum on segment 5; the dorsal striations very distinct, never more than 4 on each side above the pore. Posterior margin of the segments on the ventral half of the body not sharply serrate, the corners below each of the striations scarcely projecting, forming a right angle except in the immediate vicinity of the feet where the corners are sharper and more produced. Notch at the end of the dorsal median sulcus of each segment not especially different from that in *P. quadristriatus* or *P. subulatus*.

Last segment with the setiferous processes shorter than usual.

Anal valves moderately convex, the margins thin and not greatly raised. Preanal scale broadly truncate-rounded behind, nearly straight across.

Gonopods as shown in figure 5, *a* and *b*.

PROSTEMMIULUS SUBULATUS new species

A number of males and females collected on Morne Brigand, near Bayeux, July 16, 1927, L. Type in U. S. N. M. Paratype in M. C. Z.

Diagnosis. Closely related to *P. quadristriatus* but slightly larger; usually with one more segment; the median light stripe of the segments broader; the ventral longitudinal margin of segments 3 and 4 less

elevated; and the gonopods with several definite differences, as reference to the drawings will show.

Description. Length of the largest male 21 mm., and with 42 segments; largest female 22 mm. long, with 42 segments, the usual number apparently.

Body shaped much as in *P. quadristriatus* but more evenly and continuously tapering caudad from the broad fifth, sixth and seventh segments; the females indistinctly narrowed caudad from in front.

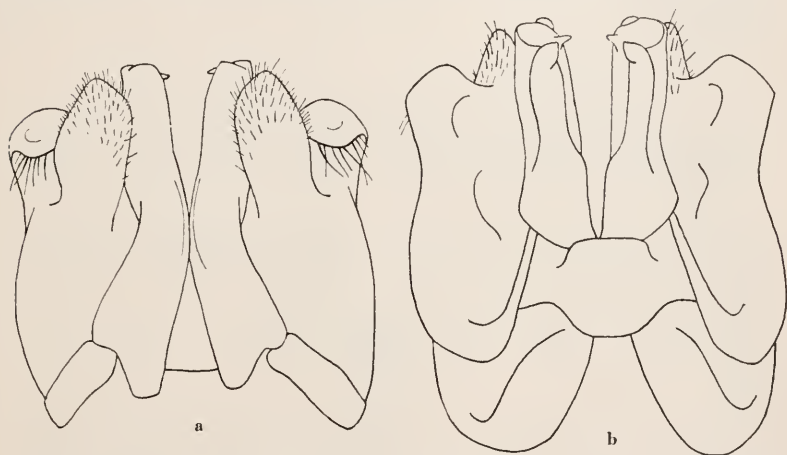


Fig. 6. *Prostemmiulus subulatus*. a, Gonopods, anterior view; b, Gonopods, posterior view.

In the color pattern the median light band sometimes moderately wide, sometimes as narrow as in *P. quadristriatus*, otherwise the coloration is as in *P. clarus*.

Head with the sulcus of the vertex obsolete; upper ocellus large, the lower one distinctly smaller.

First segment with 3 moderately impressed striae on each side.

Third segment of the males with the ventral longitudinal margin on each side only slightly raised; the corresponding margin of the fourth segment prominently raised as in *P. quadristriatus* but not as high. Third segment of the females with the emargination of the ventral posterior margin, adjacent to the legs, deep but much shorter than in *P. quadristriatus*, the posterior corner produced into a long, acute angle.

The striations begin to extend onto the dorsum on segment 5. Notch at the posterior end of the dorsal median sulcus on each of the segments deep, but narrow and inconspicuous.

Last segment not over half as long as the penultimate segment.

Anal valves slightly convex, the margins rather thin. Preanal scale broadly rounded behind.

Gonopods as shown in figure 6, *a* and *b*.

First and second male legs and the first three pairs of female legs, viewed *in situ*, do not appear to differ materially from those of *P. quadristriatus*.

PROSTEMMIULUS QUADRISTRIATUS new species

A number of males and females collected on Morne Pilboreau, above Ennery, May 4, 1925, C., May 13, 1927, L., and July 8, 1927, C. & L. Type in U. S. N. M. Paratype in M. C. Z.

Diagnosis. The gonopods show this species to be most closely related to *P. subulatus*. It is slightly smaller, usually has one less segment, and there are four striae on each side of the first segment, instead of three as in *P. subulatus*.

Description. Length of the largest specimen, a male, 18 mm., number of segments 41. Other large specimens usually with 41 segments.

Body not at all fusiform; the males distinctly subulate, broadest from segments 5 to 7 inclusive, behind which the sides taper backward, with the segments of the posterior third more strongly tapering; females with the anterior half of the body of nearly uniform width, the posterior half more strongly tapering than in the males.

Color much as in *P. clarus* but the median light line is very fine and somewhat interrupted on each segment; head, last segment and the anal valves dark.

Vertex of the head with a median groove evident just in front of the first segment; both ocelli large, but the upper one slightly larger; antennae with joint 2 longest; joint 3 slightly longer than joint 4 or 5 which are equal and longer than joint 6.

First segment with 4 striae on each side, the upper one longest, the others decreasing in length but all strongly impressed.

Third segment of the males with the mesial margin of the pleura on each side raised, especially near the posterior corner; ventral surface with a number of tiny, very short setae, a few similar ones in the same location on the next segment. Third segment of the females

with ventral, mesial margin not raised but the posterior margin broadly and deeply emarginate near the legs, the ventral posterior corner acutely produced caudad.

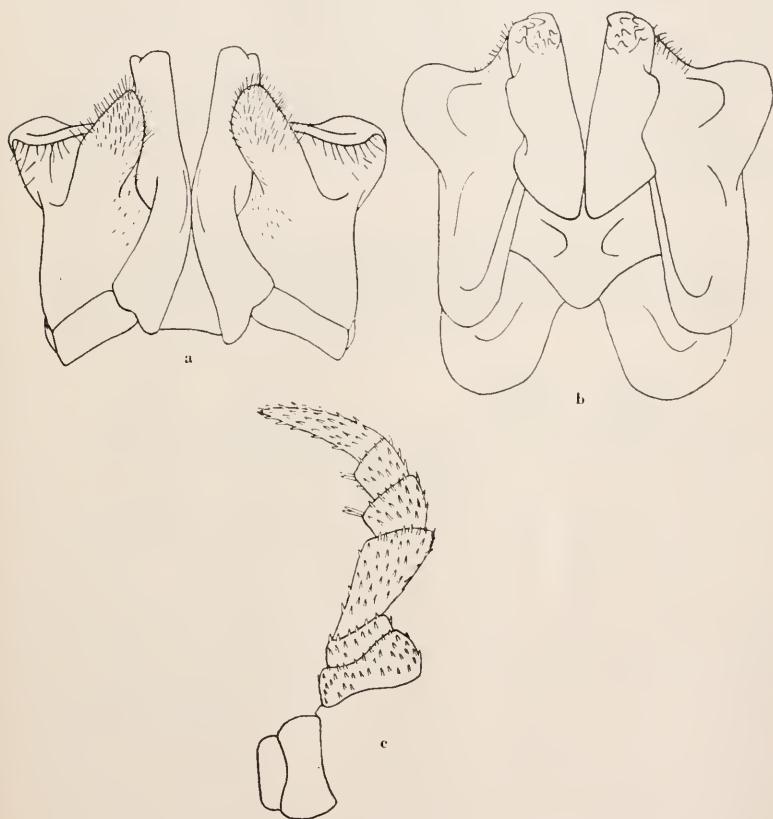


Fig. 7. *Prostemmiulus quadristriatus*. a, Gonopods, anterior view; b, Gonopods, posterior view; c, First male leg.

Fourth segment of the males with the mesial margin of the pleura on each side approaching much closer to the median line of the body beneath than on any of the other segments and produced into a slender, upright subacute lobe, with the apex reaching opposite the distal end of the coxal joint of the third leg.

Dorsal striations beginning on segment 5. Notch of the hind margin of the segments, at the end of the dorsal median sulcus, not especially deep or conspicuous, even on the posterior segments.

Last segment of the usual form, with 3 setiferous processes on each side.

Anal valves moderately convex and with the raised margins thin. Preanal scale with a slight angle behind at the middle.

Gonopods and the first legs of the male as shown in figure 7, *a, b* and *c*.

Females with a comb of fine hairs on the under side of the last joint of the first 3 pairs of legs.

PROSTEMMIULUS INTERRUPTUS new species

One male collected between 6000 and 7000 feet elevation at La Vestite, La Selle Range, Sept. 16-23, 1934 by P. J. Darlington. Type in M. C. Z.

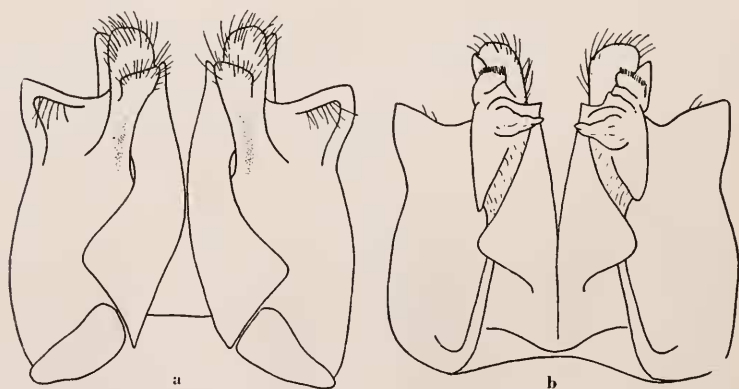


Fig. 8. *Prostemmiulus interruptus*. *a*, Gonopods, anterior view; *b*, Gonopods, posterior view.

Diagnosis. The definitely interrupted mid-dorsal light stripe is the most striking character of this species although possibly to be confused with *P. quadristriatus* which has the median stripe less obviously interrupted. The gonopods also indicate relationship with *P. quadristriatus*.

Description. Body about 15 mm. long, with 39 segments; somewhat fusiform, tapering backward from the posterior third.

In the alcoholic specimen the usual median light line is indicated

merely by a small spot on the anterior portion of each segment beneath the foregoing segment, through which it is slightly apparent. The head and several segments closest to each end of the body without light markings. On the other segments there is a large round light spot on the side and a still larger, elongate spot below this.

Ocelli strongly differentiated in size. Vertex of head strongly grooved.

First segment with four striae on each side but one of the striae on one side much shorter than on the other side.

Third segment of the male with the inner margin of the pleurae slightly raised.

Fourth segment of the male with the pleurae narrowed, produced inward and somewhat forward under the pleurae of segment 3.

Preanal scale rather large; evenly rounded behind.

Last segment with setiferous papillae short.

Gonopods as shown in figure 8, *a* and *b*.

PROSTEMMIULUS COGNATUS new species

Plate 1, Fig. 1

Two males (one the type) and several females collected near Trouin, June 26, 1934 by E. M. and H. F. Loomis. Type in U. S. N. M. Paratype in M. C. Z.

Diagnosis. Relationship with *P. subulatus* and *P. quadristriatus* is indicated but the median light band of the dorsum is slightly wider; the sides of the body are more nearly parallel; and the inner margins of the pleurae of segments 3 and 4 are different; but the main difference is in the gonopods.

Description. Body rather slender, with sides parallel to the posterior third.

Length 16 mm. Number of segments 40 or 41.

Median light stripe of moderate width, parallel sided; a light spot, in the front of which the pore is located, on each side of the segment; beneath the poriferous spot is another slightly larger spot.

Head with the groove of the vertex long and faint. Upper ocellus not quite twice as large as the lower one; both strongly convex. Antennae with joint 2 longest; joints 3, 4 and 5 subequal; joint 6 from one-half to two-thirds as long as joint 5.

First segment with two long striae on the side, below which there are two short striae.

Third segment with the inner pleural margin simple, continuous, not elevated.

Fourth segment of the male with the inner portion of the pleura raised into a large triangular lobe.

Notch at the posterior end of the median sulcus exceedingly faint.

Anal valves but slightly convex, the raised margins thin. Preanal scale quite long, narrowly rounded behind.

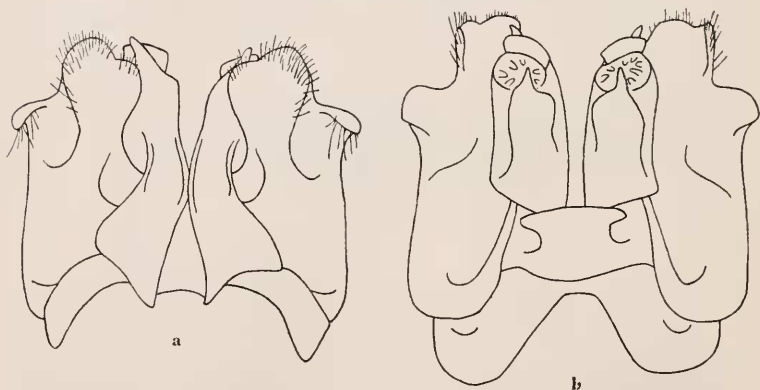


Fig. 9. *Prostemiulus cognatus*. a, Gonopods, anterior view; b, Gonopods, posterior view.

Gonopods of the same general type as those of *P. quadristriatus* and *P. subulatus* but with obvious differences as shown in figure 9, a and b.

Second male legs reduced in size and number of joints and modified in shape, the apical joint bent forward near the middle.

Third male legs normal in size and structure.

PROSTEMMIULUS CLAVIPES new species

One male collected near Trouin, June 24, 1934 by E. M. and H. F. Loomis.
Type in U. S. N. M.

Diagnosis. Very close to *P. cognatus* as shown by the similarity of the gonopods, but the much more tapering body and the greatly enlarged third legs of the male are notable differences.

Description. Number of segments 41. Length 18 mm. Width at the

second segment 1.6 mm. Body very strongly subulate, widest at the second segment behind which it narrows uniformly to the last segment. Color about as in *P. cognatus*, the anterior end of the body slightly lighter than farther back.

Head with the furrow of the vertex short.

First segment with one long marginal stria beneath which three much shorter ones decrease in length.

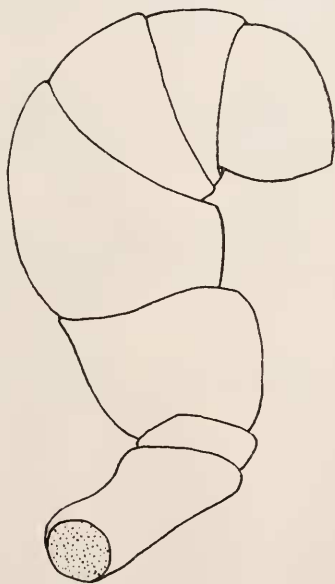


Fig. 10. *Prostemmiulus clavipes*. Third male leg, anterior view.

Segments 3 and 4 with the pleurae as in *P. cognatus*.

Second male legs smaller than in *P. cognatus* but of the same modified type.

Third male legs with normal number of joints but these, especially the five distal joints, very greatly swollen and the terminal joint is without a claw. (Fig. 10.) In *P. cognatus* the third male legs are of normal shape.

Gonopods indistinguishable from those of *P. cognatus*.

PROSTEMMIULUS AFFINIS new species

One mature male and two females, apparently lacking but one moult of maturity, collected between Petit Goave and Leogane, June 28, 1927. C. & L. Two males and one female from near Trouin, June 26, 1934, E. M. and H. F. Loomis. Type in U. S. N. M. Paratype in M. C. Z.

Diagnosis. This species and *P. heterops* are very closely related as indicated by the general form of the gonopods which, however, differ in a number of particulars. The pleurae of the third segment of the males is slightly elevated near the legs in this species and the posterior

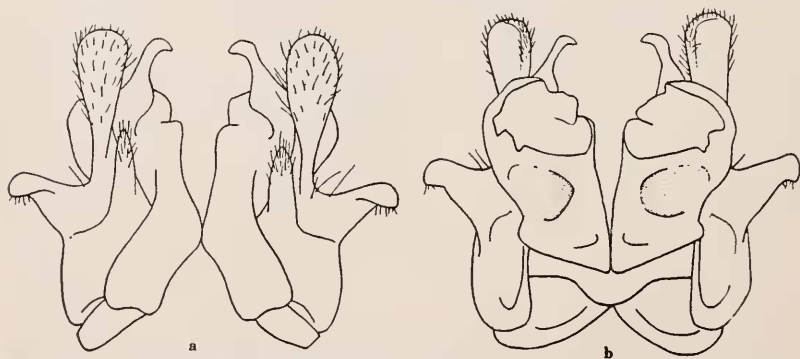


Fig. 11. *Prostemiulus affinis*. a, Gonopods, anterior view; b, Gonopods, posterior view.

margin of the third segment of the females is definitely emarginate on each side near the legs and there is a right angled posterior corner.

Description. Length of the male type 11 mm., of the largest female 13 mm. The male has 40 segments and the females 32 and 36 segments.

Body of the male moderately compressed on the sides behind, narrowing from the anterior fourth caudad; both females especially stout for this genus and not in the least compressed on the sides, the posterior end of the body much less narrower than usual.

Color about as given for *P. clarus*, the median light stripe narrow but continuous and with the sides parallel.

All the specimens have 2 eyes on each side. Groove of the vertex short and slightly impressed. Antennae as in *P. abditus*.

First segment of the type with 4 conspicuous, rather widely sepa-

rated striae on each side; in the females they are less conspicuous and not so widely separated.

Third and fourth segments of the male with the pleurae on each side much as in *P. heterops*, the inner margin of the pleura on each side of the third segment slightly more elevated.

Posterior ventral margin on each side of the third segment of the females broadly but distinctly shallowly emarginate near the posterior corner, which is nearly a right angle, not produced caudad.

Striations beginning to extend onto the dorsum on the fifth segment as usual, the striations moderately distinct. Ventral half of the segments with the posterior margins as in *P. abditus* and *P. heterops*. Notch behind the median dorsal sulcus of the segments not especially conspicuous in the type but in both of the young females the notch in the caudal segments is broadly open behind and is quite conspicuous.

Last segment and anal valves as in *P. heterops*. Preanal scale broadly truncate behind.

Females with the usual comb of fine hairs on the under side of the last joint of the first 3 pairs of legs.

Gonopods as shown in figure 11, *a* and *b*.

PROSTEMMIULUS HETEROPS new species

One male and 3 females collected at Petionville, June, 17, 1927. L. Type in U. S. N. M. Paratype in M. C. Z.

Diagnosis. This species is distinguished by its small size; reduced number of segments; the nearly flat pleurae of the third male segment; and the continuous posterior-ventral margin on each side of the third female segment lacking a distinct corner near the leg; the presence of an additional ocellus on each side of the head in some specimens; and the structure of the gonopods.

Description. The largest specimen, a female, is 11 mm. long. Each female has 38 segments, the male type 36.

Body gradually narrowed caudad from the slightly broader fifth, sixth, and seventh segments; very strongly compressed laterally in the male, somewhat less so in the females, which are stouter.

Color much as in *P. clarus*, the median stripe quite broad; head and first segment in one female dark, the last segment light; in all the other specimens the head and first and last segments are light.

Head with the groove on the vertex of the male quite long and distinct but indistinct or obsolete in the females. The male has three ocelli on each side, the additional one below the usual two and much

smaller than the second one, round and dark colored but scarcely convex; the females all have the customary two ocelli on each side. Antennal joints of about the same proportions as in *P. abditus*.

First segment with 4 rather weak, closely placed striae on each side.

Third segment of the male with the inner margin of the pleura on each side flat, not distinctly elevated as in the majority of the Hispaniolan species. Pleura on each side of the fourth segment with the inner margin developed into a long, acutely pointed, erect lobe reaching over half way to the distal end of the coxa of the third leg.

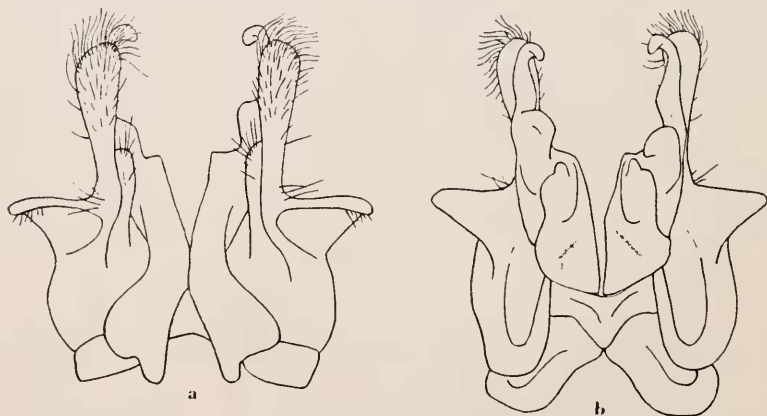


Fig. 12. *Prostemmiulus heterops*. a, Gonopods, anterior view; b, Gonopods, posterior view.

Third segment of the females with the ventral-posterior margin on each side continuous, not in the least emarginate near the feet, the posterior corner very broadly rounded and not at all produced backward.

Dorsal striations quite distinct, beginning on segment 5; posterior margins below the middle of the body as in *P. abditus*. Notch at the middle of the posterior margin of the segments not especially conspicuous.

Last segment of the usual form. Anal valves quite convex, the margins thinly elevated. Preanal scale rather narrowly truncate-rounded behind.

Females with the customary comb of fine hairs on the under side of the last joint of the first 3 pairs of legs.

Gonopods as shown in figure 12, a and b.

A mature female with 50 segments was collected at the Citadel. The specimens show a definite dorsal sulcus which is not located in a constriction.

EPINANNOLENE ORNATA Chamberlin

Epinannolene ornata Chamberlin, Bull. Mus. Comp. Zoöl., **62**, no. 5, p. 180, 1918.

Localities. Petionville, Furcy and Port-au-Prince. Several females and one male collected at Kenscoff, June 24, 1934 by E. M. and H. F. Loomis. One male and two females collected at La Vestite, La Selle range, Sept. 16-23, 1934 by P. J. Darlington.

Largest female is 39 mm. long and 2.7 mm. wide. The specimens have a transverse sulcus, not in a constriction, on the dorsum of all segments except a few at each end of the body.

Males with the median ventral portion of segment 7 raised into a high ridge behind the gonopods; the anterior face of the ridge excavated for the gonopods with additional special recesses for their tips.

Gonopods rather closely resembling those of *E. virgata*, but with several more setae near the apex.

EPINANNOLENE CONVEXUS new species

One male collected between 3,000 and 7,800 feet elevation on Morne La Hotte, Oct. 16-17, 1934, by P. J. Darlington. Type in M. C. Z.

Diagnosis. This species has the transverse constriction more pronounced than in the other three species. The color pattern and shape of the gonopods suggest close kinship with *E. ornata*.

Description. Body about 25 mm. long, with 58 segments. Anterior end of body constricted as in *E. virgata*, the first three segments gradually narrowing caudad to the fourth segment which is narrowest.

Color of the alcoholic specimen is generally brown; the head is brown between the eyes, the vertex mottled with many small light spots; first segment brown with a large transverse area of light spots on either side. Beginning with segment 2 there is a rather narrow mid-dorsal light line continuous after the first few segments; on the last segment it is wider than elsewhere. On the front half of some of the anterior segments the sides are maculate with light but on the remaining segments the color is more solid; posterior half of the segments light in color or transparent.

Ocelli in four series, 6, 7, 6, 4, forming an oval group.

First segment narrowly rounded on the sides, the lateral margin with a raised rim above which there are one or two striae extending forward from the posterior margin a little over half way to the front margin.

Segments with a pronounced constriction containing the transverse sulcus which is prominent across all segments from the fourth to near

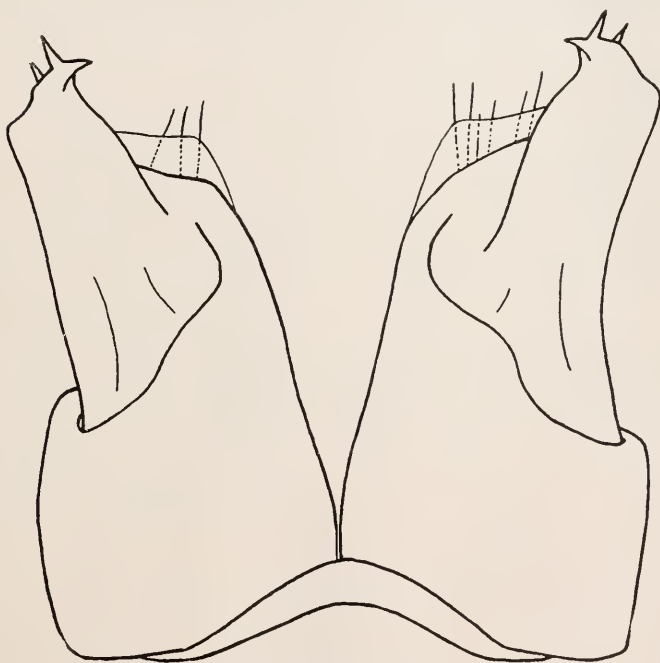


Fig. 13. *Epinannolene convexus*. Gonopods.

the caudal end of the body. Surface behind the constriction strongly convex. Surface of segments with tiny, short, longitudinal scratches and very minute reticulations, the scratches especially evident in the constriction immediately behind the transverse sulcus. Pores large, surrounded by a distinct rim.

Preanal scale transverse, the posterior margin only slightly rounded.

Gonopods broader than in the other species and with noticeable differences in form as seen in figure 13.

Seventh segment of the male with the ventral median portion raised into a crest behind the gonopods, the crest higher and more produced backward on each side of the middle than at the middle.

EPINANNOLENE VIRGATA new species

A number of female specimens were collected near Trouin, June 22, 1927, C. & L. A young male and female from the same locality, April 11, 1926, C. Many others including males (1 the type) were collected here June 26, 1934 by E. M. & H. F. Loomis. Type in U. S. N. M. Paratype in M. C. Z.

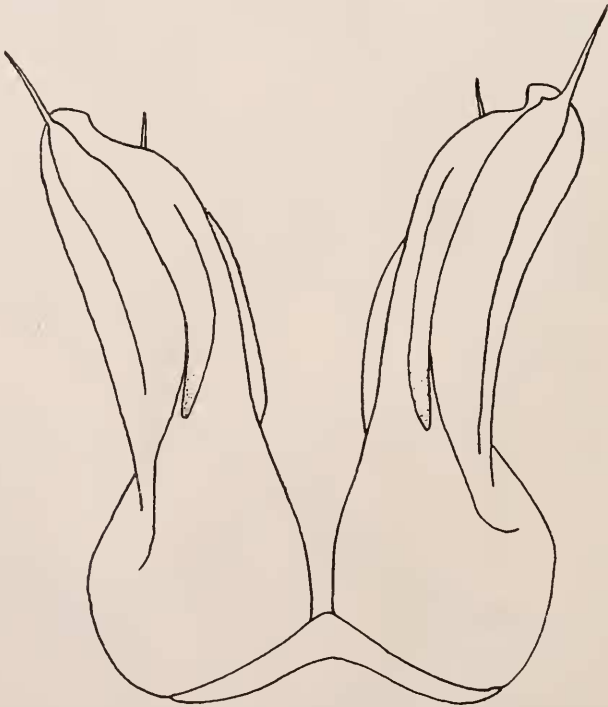


Fig. 14. *Epinannolene virgata*. Gonopods, anterior view.

Diagnosis. Not only does this species differ materially from the other two in having the head, first three segments and the last segment uncolored, but the number of segments and ocelli are greater.

Description. Length up to 32 mm., width to 2 mm. Number of segments 52 to 56.

In life the color of the head, first 3 segments, last segment, and anal valves is pinkish-yellow; the other segments with a very broad,

continuous, longitudinal band of cream color on the dorsum; posterior margin of each segment with a broad annulus of yellowish-white reaching to the pore, in front of which the segment is dark, almost black, except at the middle of the dorsum.

Eyes composed of from 25 to 35 ocelli usually in 4 series but there are 5 series in one specimen.

First segment narrowed on the sides, rounded, without any suggestion of angles; lateral rim reaching to the eye, surface within the rim usually lacking striae, but sometimes with a short one.

Anterior end of the body strongly narrowing backward from the first to the fourth segment, which is the narrowest, behind which the segments broaden gradually. Lateral striae prominent on only a few segments near the anterior end of the body where they are remote from the pores; succeeding segments with the striae confined to the ventral surfaces and not extending beyond the limit reached by the third joint of the legs. Transverse sulcus faint on all but the anterior segments and not at the bottom of a constriction, surface behind it not noticeably convex.

Preanal scale transverse, the posterior margin nearly straight across from angle to angle. Tab-processes on each side, similar to those of the *Cambalidae*, are well developed and when this genus is better known it may be found necessary to reduce the *Epinannolenidae* to a synonym of *Cambalidae*.

Sterna very finely reticulated.

Gonopods shown in figure 14.

Family SPIROSTREPTIDAE

ORTHOPORUS Silvestri

Three species belonging to this genus have been recognized in the island and are separated in the following key.

Key to the Hispaniolan species of Orthoporus

- Preanal scale large, long; the posterior margin strongly produced backward to an acute angle *triquetrus* new
- Preanal scale short and of moderate size, the posterior margin nearly transverse
- Surface of segments densely sculptured with fine longitudinal wrinkles or striae *caclatus* new
- Surface of segments quite brilliantly shining; under magnification very faintly coriaceous *haitiensis* Chamberlin

ORTHOPORUS HAITIENSIS Chamberlin

Orthoporus haitiensis Chamberlin, Bull. Mus. Comp. Zoöl., **62**, p. 183, 1918. Specimens collected near L'Archaie July 6, 1927, and at Le Brande, near Gros Morne, July 7, 1927, C. & L. The type locality, St. Marc, is between these two places. One male from between Port-au-Prince and Petionville, June 22, 1934, L.

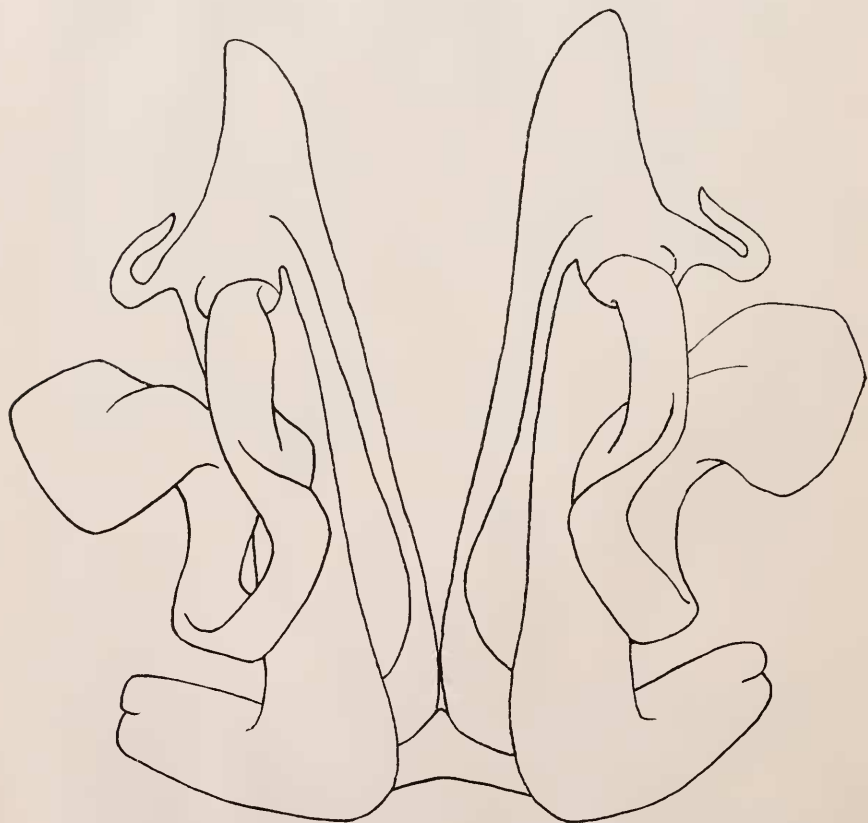


Fig. 15. *Orthoporus haitiensis*. Gonopods, anterior view.

None of the specimens has more than 55 segments.

Eyes separated by fully twice the diameter of one eye. The cluster is subtriangular, and counting downward from the top of the head the ocelli are in rows somewhat as follows: 1, 3, 4, 5, 5, 6, 7, 6, 6, 6, 4.

Surface of segments strongly shining, nearly smooth, but with moderate magnification it is seen to be very faintly and finely coriaceous, the sculpturing a little more pronounced near the posterior margin. While the long ventral striae do not approach close to the pores there are very short rudiments of striae in the strong transverse sulcus, and these rudiments frequently extend for a considerable distance above the line of pores. The sulcus is straight or slightly curved in front of the pore.

Preanal scale short, transverse, the posterior margin nearly straight across.

Gonopods of the male shown in figure 15.

ORTHOPORUS TRIQUETRUS new species

A number of female specimens collected at San Lorenzo, Samana Bay, Dominican Republic, April 6, 1934, by Dr. Thomas Barbour, who also collected additional females on Saona Island, April 8, 1934. Type and Paratypes in M. C. Z.

Diagnosis. A slightly more slender and lighter colored species than *O. haitiensis*, and with more segments; different sculpturing; and a large, pointed, preanal scale.

Description. Length of largest specimen 50 mm., width 3.8 mm. Number of segments 59 or 60. Color apparently light fawn brown throughout in life, the specimens still retaining this color.

Head smooth and shining throughout, with a fine furrow on the vertex and 4 labral setae. Eyes separated by about twice the diameter of one eye; the cluster transverse, long, narrow, subelliptical, and with ocelli arranged downward from the top of the head somewhat as follows: 1, 2, 3, 4, 5, 5, 5, 5, 5, 4, 3, 1.

First segment as in *O. haitiensis*.

Ensuing segments with the exposed surface rather coarsely and densely coriaceous to the posterior margin; anterior covered portion of segment with 6 to 8 fine annular striae. Ventral striae as in *O. haitiensis* but the rudiments do not extend above the pores. Transverse sulcus strongly bowed forward in front of each pore.

Last segment with apex more angularly produced than in *O. haitiensis* but less depressed.

Preanal scale long, triangular; the posterior margin very strongly produced back to an acute median apex.

ORTHOPORUS CAELATUS new species

A male type and two females collected between Port Margo and Limbe, June 13, 1927. L. Type in U. S. N. M. Paratype in M. C. Z.

Diagnosis. This species is very closely related to *O. sculpturatus* Karsch of Puerto Rico, as primarily indicated by the strikingly wrinkled surface of the segments, but the finger-like prolongation of the posterior piece of each gonopod, which may be seen without dissection, is the most readily observed distinctive difference. Also the first segment of *caelatus* has four sulci on each side as compared to two in *O. sculpturatus*.

Description. Color cinnamon brown; the male type 45 mm. long and 2.8 mm. broad and the largest female 60 mm. long and 4 mm. broad; number of segments 55 or 56.

Head with eyes separated by twice the transverse diameter of one eye, the cluster composed of about 36 ocelli in 5 vertical rows.

First segment with three deep sulci and a small, fine one close to the lateral margin; posterior corner on each side more nearly a right angle than the anterior one. (Fig. 16, *a*).

Surface of several of the anterior segments shining, finely punctate and slightly coriaceous but not distinctly wrinkled as are the other segments.

Ensuing segments with the dorsal surface longitudinally wrinkled, and the ventral surface coarsely striate, as described for *O. sculpturatus* by Silvestri, (Bull. Amer. Mus. Nat. Hist., 24, p. 573, 1908), but the posterior third of the anterior subsegments is finely wrinkled, similar to the surface behind the transverse suture; while the anterior two-thirds has about five low but evident annular folds. Pores beginning on segment 6, small and separated from the suture by a third of the length of the subsegment. Rudiments of ventral striae continue up the transverse sulcus and entirely across the dorsum.

Last segment with a short, obtusely rounded apex; surface coarsely punctate-coriaceous.

Anal valves with rather thick, high, shining margins; surface elsewhere punctate, coarser near the raised margins than on the sides. Preanal scale short, four times as broad as long, the posterior margin only slightly produced backward at middle.

Gonopods with the anterior-internal curved pieces not toothed on the inner side as in *O. sculpturatus*, the expanded apex more rounded and with the margin nearly smooth; apex of each posterior piece pro-

duced into a slender, finger-like lobe far above the outer, lateral projection (Fig. 16, *b*).

Males with the fourth and fifth joints of all legs, except the first two pairs, with a distinct depression on the under side, occupying the

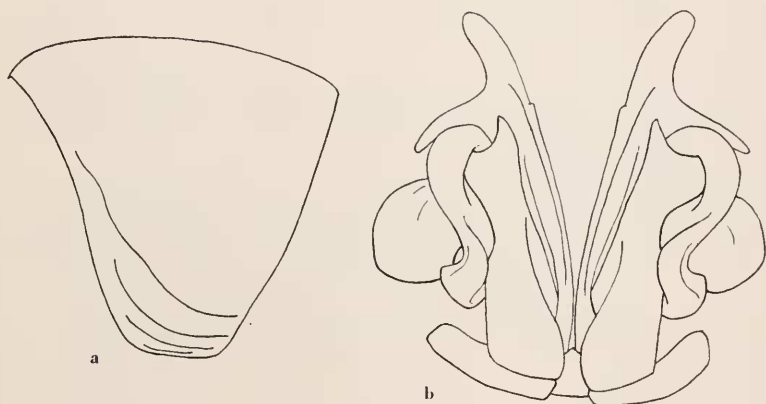


Fig. 16. *Orthoporus caelatus*. *a*, Segment 1 in lateral view; *b*, Gonopods, anterior view.

distal half of the joint. *O. sculpturatus* is said to have a pad on the under side of the same joints, and it is probable that the depressions of the Haitian species are formed by withdrawing of membranes capable of being inflated to form pad-like structures.

Order ANOCHETA

Family SPIROBOLIDAE

Key to the Hispaniolan Genera of Spirobolidae

Body 30 mm. or less in length; surface between the 3 divisions of the segments never impressed, but a transverse constriction, containing an impressed sulcus, usually crossing the middle of the midbelt; pore intermediate between this sulcus and the posterior margin of the segment; clypeal fovea 3 or 4 on each side *Microspirobolus* Silvestri

- Body longer than 30 mm.; sutures between the 3 divisions of the segments usually impressed, at least the one between the mid-belt and hindbelt, the transverse constriction, when present, including this suture; pores in front of the suture; clypeal fovea 2 on each side.....
- First segment with the sides acute; dorsal surface of the segments with coarse, crescentic impressions; color brick-red throughout
.....*Trigoniulus* Pocock
- First segment with the sides rounded; dorsal sculpturing smoother, never consisting of crescentic impressions; color never brick-red throughout.....
- Forebelt of the segments smooth, not in the least striate; males with the broad basal portion of the ventral plate of the gonopods with a very deep, semimembranous concavity on each side, the upper margin of the basal portion on each side of the apical prolongation partially covered by the lower part of the anterior plate; posterior plates broad, thin, subtriangular, the upper mesial corner of each bent back and out.....
Leiocricus new
- Forebelt of the segments somewhat striate, at least beneath; males with the ventral plate of the gonopods lacking a deep, semimembranous concavity in the basal portion on each side, and the margins of the plate entirely visible; posterior plates long, thickened and rather slender, the upper mesial corner of each not bent back and out.....
- Species lacking scobinae.....*Cubobolus* Chamberlin
- Species with scobinae.....
- Gonopods with the anterior plates long and slender, the acute tips much exceeding the ventral plate; posterior plates long, thin and parallel-sided, much exceeding the anterior plates, the distal portion bent caudad and carried outside the body.....
Alcimobolus new
- Gonopods carried within the body and of the usual spirobolid type; the anterior plates short and transverse, seldom reaching the apex of the ventral plate; posterior plates rather short, tapering, thickened structures slightly or not at all exceeding the apex of the ventral plate.....
- Species of very large size; with the inner gonopods each consisting of a single long, slender style.....*Cuboericus* Chamberlin
- Species usually of smaller size; with the inner gonopods each bifurcate but sometimes with the two branches lying so close together as to resemble a single piece.....

- Inner gonopods with both branches long and slender.....
Nesobolus Chamberlin
- Inner gonopods with the outer branch broad, sometimes divided apically into two slender branches.....*Rhinoericius* Karsch

MICROSPIROBOLUS Silvestri

Key to the Hispaniolan Species of Microspirobolus

- Segments not convex longitudinally nor marked above or on the sides with a transverse sulcus; coxae of legs 3 and 4 of the males produced into long lobes, the second joint of the fifth legs prominently developed beneath.....*esulcatus* new
- Anterior segments at least, with a distinct transverse sulcus crossing the dorsum, the surface behind it more or less convex; coxae and other joints of the pregenital legs of the males not strongly lobed.....
- Body with a few segments at each end coral pink, the intervening segments black on the dorsum and sides.....*erythrotermus* new
- Body not coral pink at either end, the intervening segments with a median dark band bounded on each side by a light band below which is a dark band.....
- First two segments yellow throughout.....*lineatus* Chamberlin
- First two segments at least partially dark.....
- Median dark band of the dorsum solid and continuous, not broken into figures.....*furcians* new
- Median dark band sometimes solid on the anterior segments but partially split on each of the other segments, forming Y-shaped figures.....
- Segments bicolored, light gunmetal and white; anal valves and preanal scale light; each of the median Y-shaped figures with base in front, the branches pointing backward.....*concinuus* new
- Segments tricolored, pink, cream and nearly black; anal valves and preanal scale dark; each of the Y-shaped figures with the base behind, the branches pointing forward.....
sigillatus Loomis

MICROSPIROBOLUS ESULCATUS, new species

Male type and other specimens collected on Morne Brigand, near Bayeux, July 16, 1927, L. Numerous females and one immature male of this species collected at Le Borgne, March 26, 1930, by W. H. Jenkins. Type in U.S.N.M. Paratype in M. C. Z.

Diagnosis. Resembling *M. lineatus* Chamberlin for which it was mistaken in collecting but in direct comparison with that species the body is stouter; the segments lack a transverse suleus above or on the

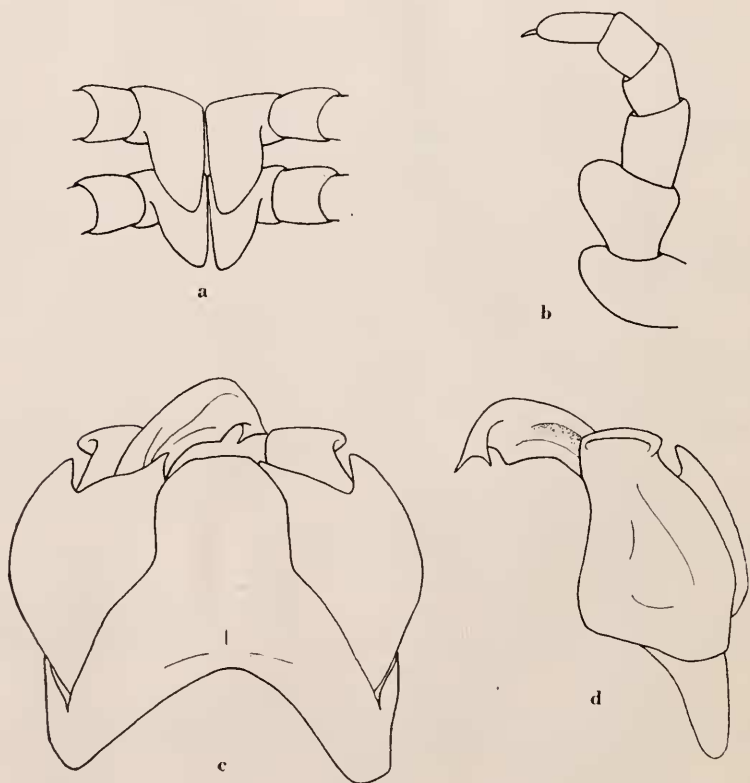


Fig. 17. *Microspirobolus esulcatus*. a, Basal joints of male legs 3 and 4; b, Fifth male leg; c, Gonopods, anterior aspect; d, One side of gonopods, posterior view.

sides; the coxae and other joints of some of the pregenital legs of the males show structural specializations and the gonopods are quite different.

Description. Color and number of segments as in *M. lineatus*, and the body of about the same length but stouter.

Head with eyes triangular, the individual ocelli scarcely separable, not convex when viewed by cross lighting. Clypeal fovea very inconspicuous, apparently varying from 2 to 4 on each side; surface of head smooth and shining, without a median furrow or transverse lines between the antennae.

First segment with the lateral angles more rounded and slightly narrower than in *M. lineatus*, and with the raised margin not continuing around the angles as in that species.

Other segments without any trace of a transverse sulcus above or on the sides, the posterior half of the segments flat instead of somewhat convex; transverse sutures between the 3 belts not the least impressed but sometimes visible as lighter lines in the integument; lateral sutures not impressed but sometimes showing in the integument. Surface of the segments smooth and very highly polished; ventral striae weak and not exceeding the tips of the legs.

Last segment a little more broadly rounded at the apex than *M. lineatus*; exceeded by the anal valves, which are evenly convex and not margined. Preanal scale a little more subtriangular than in *M. lineatus*, not evenly rounded from side to side.

Males with the coxae of legs 3 and 4 produced into very long lobes directed up and strongly caudad, those of the third legs inconspicuously larger (Fig. 17, *a*); coxae of the fifth legs very much produced but with the ventral side of the next joint developed into a large, rounded knob (Fig. 17, *b*): coxae and the second joints of legs 6 and 7 with processes decreasingly smaller than on the fifth legs.

Ventral crest of the seventh segment of the male elevated as in *M. lineatus*, the anterior edge emarginate in the same way.

Gonopods as shown in figure 17, *c* and *d*.

MICROSPIROBOLUS ERYTHROTERMUS, new species

Many specimens, including the male type, collected at Le Brande, July 7, 1927, C. & L. Type in U. S. N. M. Paratype in M. C. Z.

The animals were all found in the humus material accumulated in pockets on the top of huge, rough rocks in the woods, but none was found in the humus-covering of the ground itself.

Diagnosis. This beautiful and distinctive species has a black head, a few of the anterior and posterior segments light coral red, and the intervening segments bluish black.

Description. The largest specimen, a female, measures 28 mm. in

length and 3 mm. in breadth, the males are smaller and more slender than the females. Number of segments 41 to 45.

In life the body is strongly shining; the head black; segments 1 to 4 inclusive light coral-red above and below; segments 6 and 7 with the red color converging caudad on the dorsum to a blunt point on the posterior part of segment 7, the sides of the 2 segments and the remainder of the body to the penultimate segment bluish-black; posterior border of the penultimate segment and the entire anal segment, except

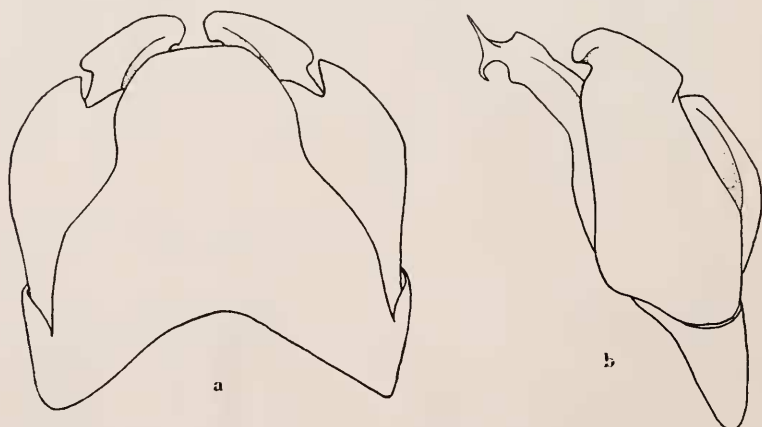


Fig. 18. *Microspirobolus erythrotermus*. a, Gonopods, anterior view; b, One side of gonopods, posterior view.

the lighter colored apex, similar in color to the first segments; ventral surfaces adjacent to the base of the legs, anal valves and preanal scale light pink.

Head with eyes triangular; the ocelli inconspicuous, not convex when viewed by cross lighting; median furrow impressed on the front and clypeus, the latter with 3 or 4 fovea on each side.

First segment with the sides moderately broadly rounded and with a strong raised rim proceeding from the lower corner of the head around the angle to the posterior margin, the rim narrower on the angles than in front.

Ensuing segments with the transverse sutures between the 3 belts showing as light lines in the integument, the suture between the mid- and hindbelt not distinctly impressed but in the bottom of a broad and shallow constriction which is less conspicuous on the dorsum than on

the sides. Lateral suture showing light colored in the body-wall but not impressed except infrequently on the hindbelt immediately after the pore. Pores located directly in the bottom of the transverse constriction, apparently opening through the suture. Surface of the segments smooth and shining, 8 to 10 ventral striae on the hindbelt and rather prominent, not reaching the tips of the legs; striae on the fore- and midbelt finer and more numerous.

Last segment abruptly rounded behind, almost acute, and very slightly exceeding the summit of the anal valves as seen from the side. Valves strongly convex, not margined, meeting in a deep groove. Preanal scale subtriangular, broadly rounded at apex, each side shallowly emarginate near the lateral angle.

Males with the coxae of legs 3, 4 and 5 a little produced, the outer joints not modified beneath; other legs normal.

Ventral crest of the seventh segment of the males low, less definitely raised than in *M. lineatus* or *M. esulcatus* but similarly broadly emarginate at the middle in front.

Gonopods as shown in figure 18, *a* and *b*.

MICROSPIROBOLUS CONCINNUS, new species

A great number of specimens were collected on Morne Brigand, near Bayeux, July 16, 1927. L. The type is a male in the U. S. N. M. Paratype in M. C. Z.

Diagnosis. The light, complicated markings; small circular eyes with prominent ocelli; simple pregenital legs of the males; and the form of the gonopods distinguish this handsome species.

Description. The largest specimen, a female, is 25 mm. long and 2.5 mm. broad; the males shorter and more slender than the females. Number of segments 39 to 42.

Living colors white and light grayish-gunmetal. Head dark except the clypeal region. First segment white except a small dark Y-shaped figure at the middle behind, with the ends of the branches nearly reaching the posterior margin. Along the middle of the dorsum of the ensuing segments is a broad dark band appearing continuous, but with slight magnification the posterior margin of each segment is seen to be narrowly white with the dark color on the forebelt of the next segment showing through; on each of the anterior segments the dark area is slightly emarginate behind but on the segments further back the excision is deeper and the dark color is in the form of a Y, with its base on the forebelt and its tips stopping considerably short

of the posterior margin of the hindbelt. Laterad of the median markings the color is white to near the pores where it changes to dark and

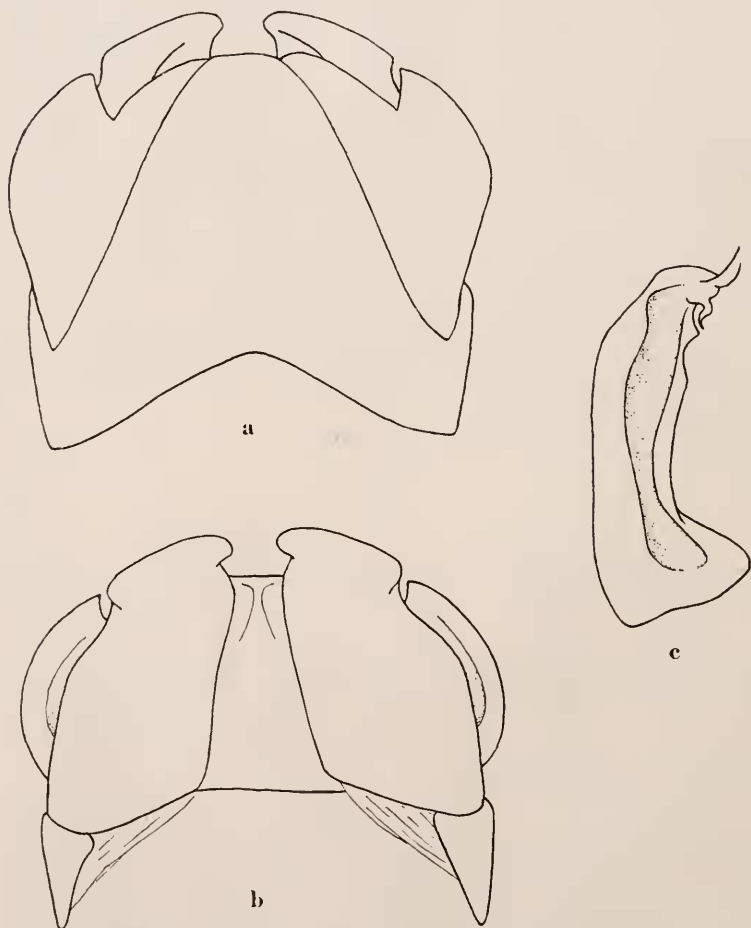


Fig. 19. *Microspirobolus concinnus*. a, Gonopods, anterior view; b, Gonopods, posterior view; c, Inner gonopod, posterior view.

a little distance below the pores this dark color begins to recede from the hindbelt and is gradually restricted to the mid- and forebelt and does not extend ventrad to the tips of the legs. Last segment dark,

with a large round white spot on each side in front. Antennae, legs, anal valves and preanal scale light colored.

Head with the eye cluster small, circular, the 16 to 20 ocelli large, distinctly convex, and arranged in 5 rows. Median furrow usually obsolete, when present only faintly visible in the clypeal region. Clypeus with 3 or 4 fovea on each side.

First segment with the sides narrowly rounded and with a fine raised rim extending from opposite the middle of the eye around the side to the posterior margin; sides above the lateral margin frequently with 1 or 2 short rudimentary striae proceeding forward from the back margin.

Ensuing segments with none of the sutures impressed, although occasionally showing in the body-wall as light lines. Segments of the anterior half of the body crossed by a transverse constriction in the midbelt, containing an impressed sulcus, especially definite on the first 10 or 12 segments, and with rudiments of the ventral striae carried nearly to the pores. On the posterior half of the body the sulcus becomes obsolete and the constriction is much less evident, and does not cross the dorsum of the last few segments. The posterior half of the anterior segments is strongly convex. Pores small, in the usual position half way between the constriction and the posterior margin. Surface of the segments smooth and very strongly shining, without any fine aciculations showing. Ventral striae not extending beyond the tips of the legs, except on the first segments.

Last segment with the apex broad but abruptly rounded, subangulate, not exceeding the summit of the valves. Valves moderately convex, not margined. Preanal scale comparatively short, almost evenly rounded from side to side and without lateral emarginations.

Males with none of the coxae or other joints of the pregenital legs furnished with lobes, the mesial corners of the coxae of legs 3 to 7 a little more prominent than in the females.

Ventral crest of the seventh segment of the males high and thin at the middle, the anterior margin broadly and deeply emarginate from side to side.

Gonopods as shown in figure 19, *a*, *b* and *c*.

MICROSPIROBOLUS LINEATUS Chamberlin

Microspirobolus lineatus Chamberlin, Bull. Mus. Comp. Zool., **62**, p. 209, 1918.

Collected at Carrefour, Riviere Froid, July 3, 1927, C. & L.; and at Diquini, the type locality, June 27, 1927, L.; Kenscoff, June 24, 1934, L.

In addition to the characters given in the original description the following points were noted.

The clypeal fovea usually 3 on each side instead of 2 as stated.

Sutures between the 3 belts of the segments not impressed, the transverse sulcus, apparently crossing the midbelt, strongly impressed above and on the sides, dividing the segments into 2 subequal parts, the posterior part somewhat convex, lateral suture impressed behind the transverse sulcus; pore located half way between the sulcus and the posterior margin, above the lateral suture, which it usually touches on the anterior segments but above which it is considerably removed on the middle and posterior segments.

Anal valves evenly convex, not at all margined. Preanal scale rather long, broadly and evenly rounded from side to side.

Seventh segment of the males with a thin ventral crest moderately elevated, the anterior margin at the middle broadly and rather deeply emarginate.

None of the anterior male legs have conspicuous lobes on the coxae or other joints.

The gonopods have been figured by R. V. Chamberlin in the Proc. U. S. Nat. Mus., 61, Art. 10, 1922, Pl. 4, Fig. 5 & 6.

MICROSPIROBOLUS FURCIANUS new species

A male (type) and three females collected near Furey on Mt. Noir, at 6,100 feet elevation, Aug. 21, 1917, C. Type in U. S. N. M. Paratype in M. C. Z.

Diagnosis. Resembling *M. lineatus* Chamberlin but larger in size and with the first four segments dark colored. The deeply grooved median plate and simple hooked inner piece of the gonopod are not found in the other species.

Description. Largest female 30 mm. long and 2.3 mm. broad, with 41 segments; the male broken but about 22 mm. long and 1.8 mm. broad, with 39 segments.

In alcohol the head, first four segments and the last segment dark; on the other segments the sides are dark to just above the pores above which the dorsum is yellow with a broad, moniliform median dark line extending from segment 5 to the penultimate segment, the dark median area on each segment at least twice as wide in front as on the posterior part; hind margin of all segments, except the last, narrowly transparent yellow.

Head with the eyes composed of 17 to 19 medium sized, convex

ocelli in 4 or 5 series; median furrow showing only on the clypeus; clypeus with 4 fovea on each side.

First segment with the anterior lateral corner forming a rounded right angle or slightly less, the lateral margin straight to the posterior corner which varies from being nearly a right angle to a much more obtuse one depending upon the angle of the anterior corner, as when it is sharp the posterior angle is obtuse; raised rim extending from behind the eye to the posterior corner.

Ensuing segments with none of the sutures impressed between the three divisions (forebelt, midbelt and hindbelt) but showing as light lines in the body-wall after the specimens dried somewhat. There

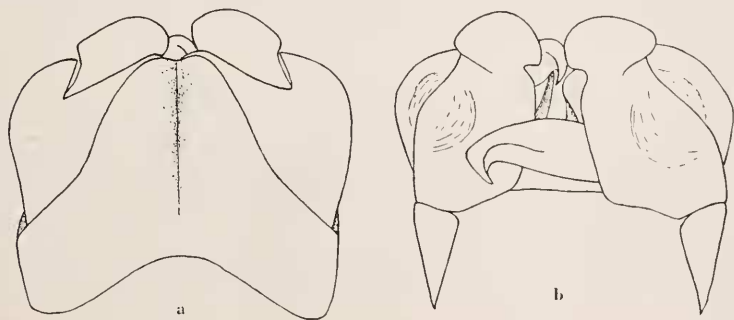


Fig. 20. *Microspirobolus furcianus*. *a*, Gonopods, anterior view; *b*, Gonopods, posterior view.

is a strong transverse median constriction across the segments containing a deep sulcus on all except a few of the posterior segments; surface behind the constriction definitely convex, the pore half way to the posterior margin; surface of the dorsum shining, but magnification shows fine reticulations.

Last segment with apex moderately broadly rounded. Valves meeting in a deep groove and not margined; preanal scale quite long and rather abruptly rounded at the apex.

Gonopods as shown in figure 20, *a* and *b*, the median plate very deeply grooved at middle.

First and second male legs with the 5 outer joints distinctly thicker than on succeeding legs; coxae of the fourth legs with a prominent inner corner, but not forming a definite lobe; none of the other coxae with prominences.

Male with the median ventral crest of the seventh segment high and thick throughout, margining the deep excision in which the tips of the gonopods rest.

MICROSPIROBOLUS SIGILLATUS Loomis

Microspirobolus sigillatus Loomis, Smiths. Misc. Coll., **89**, no. 14, pp. 20 & 21, 1934.

Morne Pilboreau is the type locality. It has also been collected at the Citadel.

TRIGONIULUS Pocock

The characters given in the generic description are sufficient to identify the single Hispaniolan species.

TRIGONIULUS LUMBRICINUS (Gerstaecker)

Spirobolus lumbricinus Gerstaecker, Gliederthier-fauna Sansibar, p. 516, 1873.
Spirobolus goesi Porath, Bih. Svensk. Vet.-Akad. Handl., **4**, no. 7, p. 36, 1876;
Spirobolus dominicae Pocock, Ann. Mag. Nat. Hist., ser. 6, **2**, p. 481-483, 1888.
Spirobolus sanctae-luciae Bollman, Proc. U. S. Nat. Mus., **11**, p. 214, 1888.

This is one of the most common millipeds in Hispaniola and is known from 6 other West Indian islands and the north coast of South America. It is frequently seen about houses crawling on shaded walks or stone walls.

Collected at Port-au-Prince, Petionville, Diquini, Grande Riviere, Ennery, Limbe, Bayeux, and Cape Haitien.

LEIOCRICUS New Genus

Type. *Leiocricus diversipes*, new species.

Diagnosis. The small size and lack of scobinae indicate relationship with *Cubobolus* but the gonopods show very striking differences, and the lack of striae on the forebelt also is significant.

Description. Antennae not reaching beyond the posterior margin of the first segment; sense cones 4. Clypeus with 2 foveolae on each side.

First segment broadly rounded on the sides, weakly margined below the eyes.

Second segment prominent below segment 1, the ventral surface concave. Forebelt of segments smooth, without any transverse

striae above or below. Pores in front of the conspicuously impressed transverse suture, above the middle of the body as viewed from the side.

Gonopods with the basal portion of the ventral plate short and very broadly transverse with a deep, semimembranous, subreniform depression on each side, with the emargination upward; the upper edge of the transverse basal portion on each side slightly covered by the lower part of the anterior lobe; upper portion of the plate a third as wide as the basal portion, with the sides converging distad to a rather narrowly rounded apex. Anterior lobes subquadrate, their upper, outer corners higher than the inner ones. Posterior lobes subtriangular, concave, the apical corner of each lobe thin and bent back and out. Inner gonopods terminating in a bifurcate arm, the branches subequal, long and slender, almost acicular, divergent; some distance below the bifurcation a simple bladelike branch curves up and inward from the outer side of the gonopod, the apex equalling the tips of the upper branches.

Pregenital legs of the male notably stouter than those that follow, the last joint simple beneath; coxae of legs 3, 4 and 5 produced up and back into long, slender lobes. Ventral anterior margin of segment 7 not elevated or specially excavated at the middle in front for the reception of the tips of the gonopods.

LEIOCRICUS DIVERSIPES, new species

Collected at the top of Morne Pilboreau, between Ennery and Plaisance, May 24, June 13, (type), and July 8, 1927, L.; near Cancoque, May 13, 1927, L.; Le Brande, July 7, 1927, C. & L., Le Borgne, March 26, 1930, J. & C. Type in U. S. N. M. Paratype in M. C. Z.

Largest specimen, a male, 45 mm. long and 4.2 mm. wide, with 48 segments; all the other specimens have between 41 and 44 segments inclusive.

Living color not noted; in alcohol each segment is nearly black with most of the hindbelt light brown.

Head with the eye-cluster small, circular, composed of about 22 ocelli in 6 rows. Antennae not extending beyond the posterior margin of the first segment. Clypeus with 2 fovea on each side, emargination shallow. Median sulcus weak between the eyes, moderately impressed on the clypeus, no transverse wrinkles between the eyes.

First segment laterally broadly and evenly rounded, with a very narrow raised margin not quite reaching to the eye.

Second segment considerably exposed below the first segment and with a rounded anterior corner; ventral surface slightly concave.

Transverse sulcus very distinct on the back and sides of the anterior segments; the hindbelt strongly convex but the actual margin thin; midbelt somewhat less convex. On the posterior half of the body the transverse sulcus is less distinct above and on the sides, and the mid-

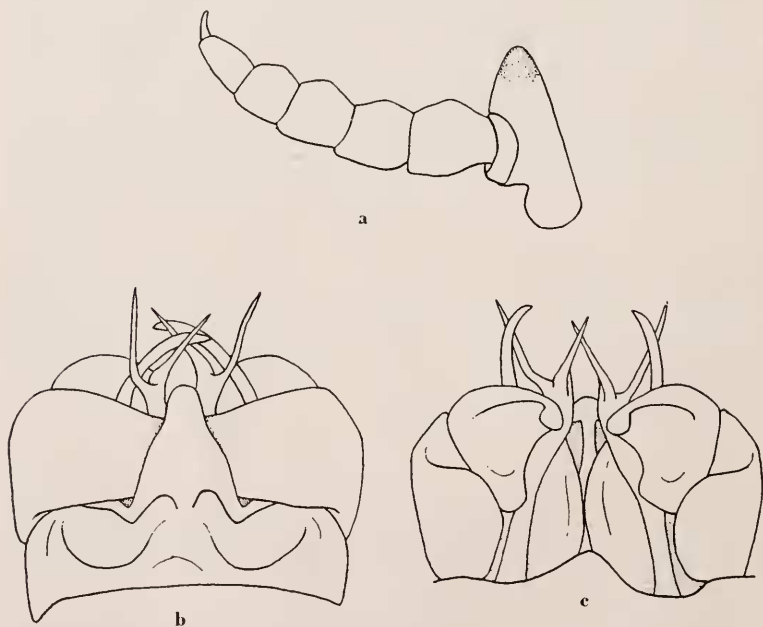


Fig. 21. *Leiocricus diversipes*. a, Fourth male leg, posterior view; b, Gonopods, anterior view; c, Gonopods, posterior view.

and hindbelts are flatter, and on the final segments the sulcus is scarcely visible. Pores rather small, located just in front of the sulcus which usually is straight and continuous opposite the pore. Lateral sulcus not usually impressed or visible on either the mid- or hindbelts. Surface of the segments shining, with a few short, shallowly impressed longitudinal scratches scarcely visible except adjacent to the transverse sulcus; the posterior half of the hindbelt strongly shining. Forebelt smooth, without any of the usual transverse striae either above

or below. Ventral striations of the mid- and hindbelts extending to the ends of the legs.

Last segment with apex short but rather suddenly rounded, exceeded by the anal valves, which are broad, moderately convex and with the margins continuous with the sides, not raised or thickened. Preanal scale less acute than the apex of the last segment, the sides usually inconspicuously and shallowly emarginate.

Males with the pregenital legs notably more robust than the others; the last joint simple beneath, lacking the swollen pad. Coxae of legs 3, 4 and 5 produced into long, rather slender, triangular lobes directed somewhat caudad, especially on legs 3 and 4 which have the longest lobes; under high magnification the distal portion of the lobes appear minutely scabrose (Fig. 21, *a*); coxae of legs 6 and 7 not produced.

Seventh segment of male not crested below but flat and quite long in the middle line, the entire front margin broadly and shallowly emarginate but without special recesses for the tips of the gonopods.

Gonopods as shown in figure 21, *b* and *c*.

CUBOBOLUS Chamberlin

The members of this genus outwardly resemble *Rhinoericus* but they have no scobinae. The ventral plate of the gonopods is somewhat narrowed above the middle but not remarkably so as in *Leioericus* or *Nesobolus*. The tips of the anterior lobes of the gonopods of *C. cinchouanus* Chamberlin, a Jamaican species, are shown exceeding the end of the ventral plate, and completely hiding the posterior lobes.¹

CUBOBOLUS RARIOR (Chamberlin)

Rhinoericus rarior Chamberlin, Bull. Mus. Comp. Zool., **62**, p. 187, 1918.

Cubobolus rarior Chamberlin, Proc. U. S. Nat. Mus., **61**, Art. 10, p. 10, 1922.

This species is known from only the original collection at "Grand Riviere." This is probably the Grande Riviere, near Jacmel.

CUBOBOLUS CONSUTUS new species

A single female collected at Le Brande, July 7, 1927, C. & L. Type in U. S. N. M.

Diagnosis. The striate transverse sulcus of the segments, and the decidedly transverse last segment sufficiently mark this species to

¹ Proc. U. S. Nat. Mus., **61**, Art. 10, 1922.

justify a description dependent solely on a single female. When males are examined it is entirely possible the assignment of the species to *Cubobolus* will be found erroneous but no other genus appears to be available at present and the erection of a new genus based on external characters alone is not advisable.

Description. Body 66 mm. long and 6.5 mm. wide. Number of segments 47.

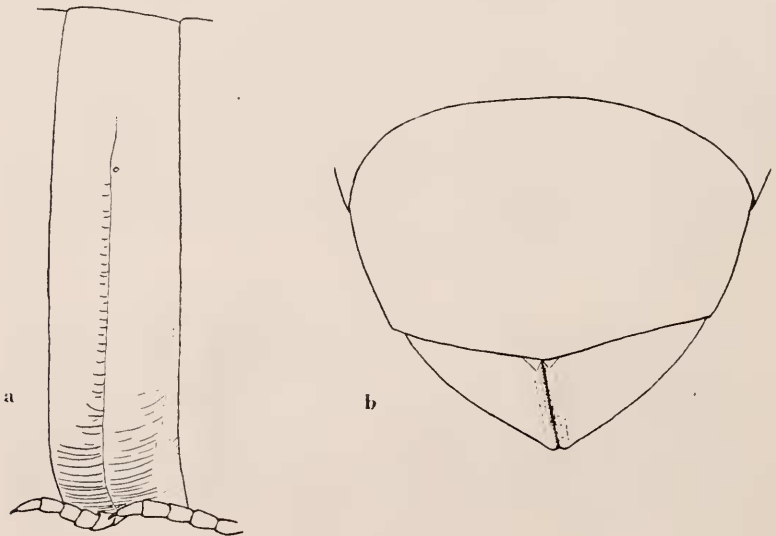


Fig. 22. *Cubobolus consutus*. *a*, Segment from near middle of body, lateral view; *b*, Last segment and valves, oblique posterior view.

Living colors very dark gunmetal, the posterior margins of the segments very narrowly light colored, almost white; first segment narrowly bordered with white throughout; labral region of the head, antennae, legs and ventral surfaces colorless. With a hand lens the suture between the fore- and midbelt is seen to be areolate above the level of the pores and the suture between the mid- and hindbelt is areolate below the pores.

Head with the eyes rounded, composed of about 30 ocelli in 7 rows. Antennae short, reaching the posterior margin of segment 1. Clypeus with 2 setae on each side, the emargination quite deep but much less than a right angle. Front with the median sulcus strongly impressed

on the clypeus, less so between the bases of the antennae; a deep furrow curving forward and inward from the front of each antennal socket but not reaching the median sulcus.

First segment with the sides broadly, evenly rounded, and with a raised rim extending from the lower part of the eye around the lateral margin almost to the posterior margin, the rim broadest along the anterior margin and narrowed on the lateral margin.

Second segment with a prominent, rounded angle below the side of segment 1; ventral surface rather deeply concave and very strongly striate.

Ensuing segments with the transverse sulcus scarcely evident above the pores except on the most anterior segments; below the pores the sulcus is pronounced and the ventral striae, which cross the hindbelt for some distance beyond the tips of the legs, are continued in the sulcus as short rudiments, resembling stitches, all the way to the pore on all of the segments (Fig. 22, *a*). Lateral sutures not impressed on any of the segments. Pores high on the sides of the body, just in front of the sulcus. Forebelt with extremely fine, moderately long transverse striae, usually branching from each other. Mid- and hindbelt not strongly shining, very minutely reticulated with the customary fine, short, acicular scratches. Posterior margin of the segments moderately thickened, scobinae absent.

Last segment almost transverse, the apex scarcely at all produced; exceeded by the anal valves which are broad, nearly flat, the margins indistinctly raised (Fig. 22, *b*). Preanal scale nearly three times as broad as long, the apex suddenly but bluntly rounded, the sides slightly emarginate near the lateral angles.

Legs short, the pairs scarcely half as long as the diameter of the body. Pleurae noticeably broader than long, with strongly evident transverse striae.

CUBOCRICUS Chamberlin

This genus was separated from *Rhinocricus* on the basis of the inner or posterior gonopods being slender and simple, instead of bifurcate; antennal cones numerous; and the anterior legs of the males having a swollen pad on the under side of the terminal joint. The species are of large size, with the body from 10 to 12 times as long as broad.

A single species, of which no specimens were examined, appears to represent this genus in the island.

CUBOCRICUS HAITENSIS (Gervais)

Julus haitensis Gervais, Ins. Apteres, 4, p. 191, 1847.

The length given for this species is 163 mm. and the breadth 13 mm.; the number of segments 54.

This large and unusually slender spirobolid could not be confused with any of the other members of the family thus far known from Hispaniola. It seems not to have been reported since it was described, and the present collection contains no specimens of it.

ALCIMOBOLUS new genus

Type. *Alcimobolus angustipes* new species.

Diagnosis. Many characters associate this genus with *Cubocricus*, but the much smaller size, short, thick body; and the peculiar long, narrow gonopods of the present genus are instantly recognized differences.

Description. Body of medium length but relatively stout, only about eight times as long as wide. Legs short and not visible from above.

Head with two clypeal fovea on each side; antennae rather short and slender, widely separated; sense cones numerous.

First segment laterally rounded, with a very short marginal furrow well below the eye.

Second segment rounded beneath the first segment.

Ensuing segments without any impressed sutures and no definite transverse constriction; ventral striae fine and not extending opposite the ends of the legs; scobinae present.

Last segment surpassed by the anal valves, which have raised and thickened margins.

Gonopods with the ventral plate strongly constricted below the middle; anterior plates long and narrow, the acute distal ends much exceeding the ventral plate; posterior plates thin, very long and narrow, with sides nearly parallel to the broadly rounded, slightly hispid apex; the plates curving caudad with the outer portion apparently carried outside the body; inner gonopods simple, long and very slender.

Coxae of the third male legs produced into small lobes; similar smaller lobes on several of the ensuing legs. Outer joint of all male

legs except the first two pairs and a few pairs at the posterior end of the body with inflated ventral pads.

ALCIMOBOLUS ANGUSTIPES new species

Two males and one female from San Lorenzo, Samana Bay, Dominican Republic, April 6, 1934, Dr. Thomas Barbour. Type and Paratype in M. C. Z.

Length from 56 to 62 mm., width from 7.5 to 8 mm. Number of segments 44 and 45.

The color of the two months old alcoholic specimens is dark olive green, the posterior margins of the segments almost black.

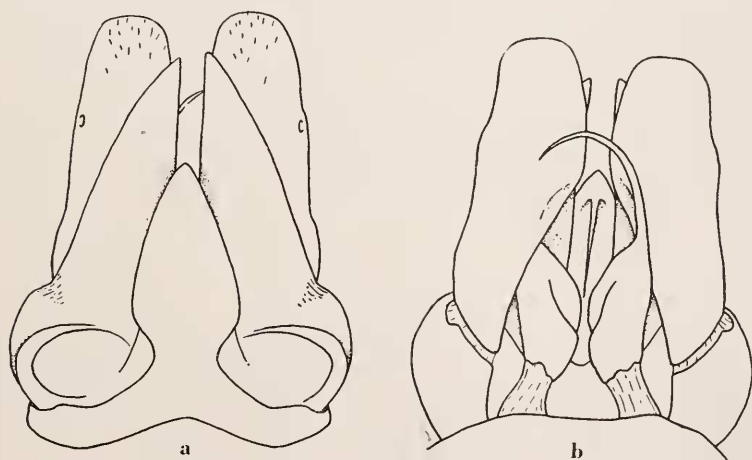


Fig. 23. *Alcimobolus angustipes*. a, Gonopods, anterior view; b, Gonopods, posterior view.

Head smooth and strongly shining throughout, with a very faint sulcus on the vertex and another on the clypeus. Antennae separated by a distance about equal to the length of the four basal joints.

First segment polished throughout; broadly rounded on the sides, with a furrow for only a very short distance along the anterior lateral margin, its upper limit separated from the lower corner of the eye by about the length of the furrow.

Other segments without any transverse constriction or any impressed sutures, either across the dorsum or along the sides near or behind the pores. Forebelt crossed by a few irregular, discontinuous,

transverse striae; midbelt finely but definitely coriaceous; hindbelt coriaceous in front but brilliantly shining at the posterior margin; ventral striae fine and not reaching opposite the tip of the legs. Pores surrounded by a faintly elevated, flattened ring; the pore on segment 6 set far below the level of the other pores and surrounded by a larger ring. Scobinae present to about segment 21; composed of a long, very narrow transverse pit, followed by a short, broadly triangular striate area.

Last segment very densely and finely coriaceous, much more so than any other segment; apex slightly produced but exceeded by the anal valves.

Anal valves similarly coriaceous, except the raised margins which are strongly shining.

Preanal scale rounded-angular at apex, quite long; nearly smooth behind.

Coxae of third male legs produced into small, sharp, conic lobes; the ensuing legs with coxae decreasing in size.

Gonopods shown in figure 23, *a* and *b*.

NESOBOLUS Chamberlin

This genus was erected to accommodate those species previously referred to *Rhinocricus* having scobinae; 4 sense cones on the antennae; gonopods with the distal half of the ventral plate elongated and much narrower than the basal portion; inner gonopods with two slender prongs, the outer one exceeding the inner one in length.

Key to the Hispaniolan species of Nesobolus

- Body 12 to 14 times as long as broad, slightly compressed laterally;
number of segments 58 to 60 *indus* (Beauvois)
- Body about 10 times longer than broad and not noticeably compressed
laterally; segments 47 to 52
- Body seldom exceeding 80 mm. in length; preanal scale triangular;
ventral plate of gonopods with the apical portion less than
half as wide as the basal portion *maltzani* (Pocock)
- Body about 90 mm. long; preanal scale rounded behind; ventral plate
of the gonopods triangular, with the apex rounded
domingensis (Pocock)

NESOBOLUS INDUS (Beauvois)

Julus indus Beauvois, Ins. d'Afr. et d'Amer., p. 154, 1805.

Spirostreptus indus (Pocock), Jour. Linn. Soc., **24**, p. 506, 1894.

Orthoporus (?) *indus* (Chamberlin), Bull. Mus. Comp. Zoöl., **62**, p. 184, 1918.

Numerous specimens collected in 1927, C. & L., 1930 and 1934, L. at Port-au-Prince; Petionville; Kenscoff; Carrefour; Riviere Froid; between Mirogoane and Petit Goave; Trouin; and at Concoque, between Limbe and Ennery. Port-au-Prince, Oct. 1934, P. J. Darlington.

There can be little doubt that these specimens represent the species Beauvois described as *Julus indus* from Santo Domingo. It is obvious that the species really belongs in the *Spirobolidae* and must now be removed from the *Spirostreptidae*, in which Pocock and others placed it without examining specimens.

Pocock's supposition that *Julus beauvoisi* Gervais, from Martinique, is distinct from *N. indus* doubtless is correct, but neither of these species has been reported from Martinique since 1847, and specimens from there must be seen before the question can be settled. However, until this is done it seems advisable to consider *Nesobolus* (*Julus*) *beauvoisi* as a distinct species on purely geographic grounds.

The following description has been prepared to put *N. indus* on the same taxonomic basis as other West Indian spirobolids, and to allow the identity of the confused Martinique form to be more easily determined when specimens are found.

Description. Body very long and slender, 12 to 14 times longer than broad; the largest specimen, a female, is 82 mm. long and 6.5 mm. broad. Body slightly compressed laterally, being higher than broad when seen in cross section; and tapering very gradually at both ends, especially behind, beginning 10 or 12 segments from the end. Number of segments 58 to 60. Head small, the front strongly convex; median sulcus impressed near the clypeus but not elsewhere. Eyes circular, composed of 26 to 29 ocelli in 7 rows. Antennae short, scarcely reaching the posterior margin of segment 1; sense cones 4. Clypeus with 2 setae on each side.

First segment long, the sides a little above the lateral margin abruptly clasping the second segment and the sides of the head. Lateral margin elongate, subangulate before and behind and with an exceedingly short, narrow raised margin not reaching the eye.

Second segment with a prominent, broadly rounded corner beneath segment 1 and with a deep, triangular ventral depression on each side, containing strong longitudinal striae.

Segments without any suggestion of a transverse constriction on the dorsal, lateral, or ventral surfaces and the sulcus not impressed except occasionally for a very short distance close to the pore; lateral sulcus infrequently impressed on the hindbelt, never impressed on the midbelt; the posterior margins of the segments very thin; pores small, high on the sides in a shallow depression. Surface of the segments with

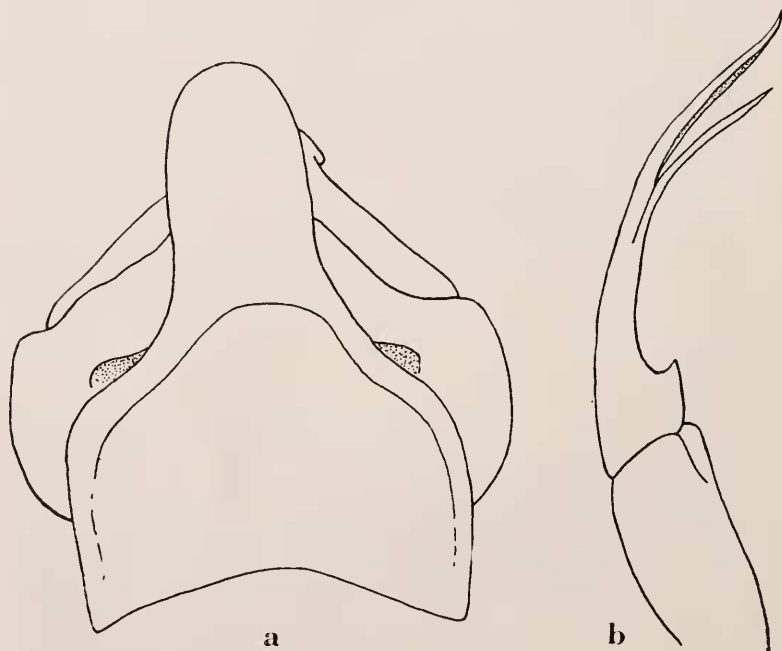


Fig. 24. *Nesobolus indus*. *a*, Gonopods, anterior view; *b*, Inner gonopod, lateral view.

very short, straight, fine scratches, not apparent close to the posterior margin. Ventral striae greatly exceeded by the legs. Scobinae usually beginning on segment 8 and sometimes ending as far back as the 27th segment; represented by very large, flat, transversely oval dull areas surrounded by the striae of the forebelt.

Last segment rounded at apex, exceeded by the anal valves which are flattened on the outer side but not at all margined. Preanal scale long, the apex similar in shape to that of the last segment.

Legs of both sexes extremely short and quite slender, the pairs only about equal to two-thirds the diameter of the body; sterna longer than broad and with 12 to 15 distinct transverse striae.

Male legs with a swollen pad on the ventral face of the last joint on the anterior half of the body. The legs in front of the gonopods with no other notable modifications although the coxae of legs 3, 4 and 5 are slightly produced.

Seventh segment of the male with a broad low ventral crest having a deep transverse pocket in the anterior face at middle for the reception of the tips of the lateral lobes of the gonopods, the posterior edge of the crest produced backward, forming a distinct median lip.

Gonopods as shown by figure 24, *a* and *b*.

NESOBOLUS MALTZANI (Pocock)

Rhinocricus maltzani Pocock, Jour. Linn. Soc. Lond., **24**, p. 495, 1894.

This species was described from the north coast of Haiti, and Chamberlin has reported it from Furey, and Jacmel on the Southern coast.¹

Specimens in the present collection are from Ennery, Le Brande, Plaisance, and Christophe's Citadel, C. & L.

NESOBOLUS DOMINGENSIS (Pocock)

Julus haitensis Saussure (not Gervais), Mem. Soc. Phys. Hist. Nat., p. 363, 1860.

Rhinocricus domingensis Pocock, Jour. Linn. Soc. Lond., **24**, p. 495, 1894.

No specimens of this species have been recognized in the present collection and its inclusion in the genus *Nesobolus* is based entirely on Pocock's association of the species with *N. maltzani*. The correctness of this disposition awaits the examination of specimens.

RHINOCRICUS Karsch

The members of this genus, in its present semi-restricted state, have the antennal cones variable, there being either four or many cones; clypeus with two fovea on each side; first segment with the sides rounded; scobinae present on some of the anterior segments; and the males have the distal branch of the inner gonopods moderately broad and long, the lower branch usually more slender.

¹ Bull. Mus. Comp. Zool., **62**, p. 193, 1918.

The Hispaniolan species are distinguished in the following key, which has been divided into two sections, depending on the number of antennal cones.

Key to the Hispaniolan species of Rhinocricus

Last joint of antennae with four sense cones.

Segments with a second transverse sulcus in front of the usual one; last segment with the apex prolonged into a distinct mucro greatly exceeding the anal valves *monilicornis* Porath

Segments with only one transverse sulcus; last segment not mucronate or exceeding the anal valves

Transverse sulcus lightly impressed; scobinae without pits, represented by rugose areas only *scobinellus* new

Transverse sulcus deeply impressed; scobinae with pits as well as rugose areas

General color black; body moderately slender; margins of the anal valves thick but not elevated *curtior* Chamberlin

General color light cinnamon brown; body slightly stouter; margins of anal valves thin and faintly elevated . . . *mediator* Chamberlin

Last joint of antennae with numerous sense cones.

Body very large, exceeding 140 mm. in length and 17 mm. in diameter *lethifer* new

Body small, less than 50 mm. in length and 5 mm. in diameter

Body slender, over 12 times as long as thick *albolatus* new

Body about 10 times as long as thick

Transverse sulcus strongly impressed on the dorsum and sides of the body *cinctus* new

Transverse sulcus lightly or not at all impressed on the dorsal surface, slightly more strongly impressed on the sides of the body . . .

Eyes composed of 16 to 20 ocelli of which the lower ones are much the largest *furcianus* Chamberlin

Eyes composed of 25 or more ocelli, the lower ones differing little from the upper ones in size

Color rather light brown; number of segments about 43 . . *ramulus* new

Color nearly black; number of segments 46 to 48 *nigrescens* Chamberlin

RHINOCRICUS MONILICORNIS (Porath)

Spirobolus monilicornis Porath, Bih. Svensk. Vet-Akad. Handl., 4, p. 31, 1876.

Spirobolus heilprini Bollman, Proc. Acad. Nat. Sci. Phila., p. 127, 1889.

In addition to Pocock's description it may be noted that the seventh segment of the male has an extremely high ventral crest, with a single

broad and deep recess or pocket in its anterior face for the reception of the tips of the gonopods.

This species has been collected at Cape Haitien, Bayeux, Limbe, and Grande Riviere. It is one of the three or four rather widely distributed West Indian spirobolids, being recorded from six islands, British and Dutch Guiana.

RHINOCRICUS SCOBINELLUS new species

One male collected from the foothills of Morne La Hotte at 4000 feet elevation, Oct. 1934 by P. J. Darlington. Type in M. C. Z.

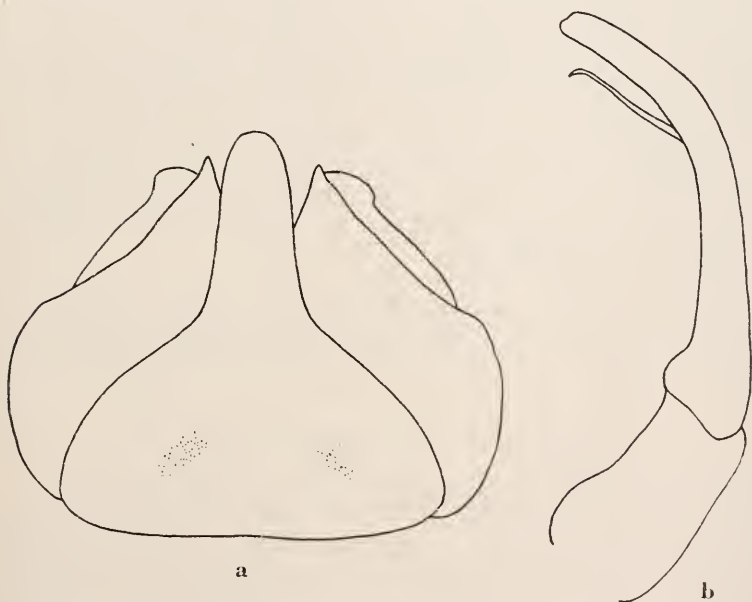


Fig. 25. *Rhinocricus scobinellus*. a, Gonopods, anterior view; b, Inner gonopod.

Diagnosis. The transverse sulcus is very faint in contrast to that in *R. curtior* and *R. mediator*, and the unimpressed scobinae is another distinctive character, in addition to which the gonopods show notable differences.

Description. Length 45 mm., width 4.5 mm; number of segments 48. The color in alcohol is dark reddish brown; the sides of the forebelt mottled with light spots; midbelt dark brown; posterior part of the hindbelt light, especially on the sides.

Antennae short and stout, each of the five outer joints broader than long; sense cones 4. Ocelli 36 in 6 series, counting from the back of the head.

First segment with sides broadly and evenly rounded, the raised marginal rim short, scarcely reaching the lower corner of the eye.

Ensuing segments with transverse sulcus lightly impressed on the sides, and still more lightly impressed on the dorsum; lateral sulcus faintly visible behind the pores. Posterior portion of body very gradually narrowed to the narrow last segment. Surface of segments smooth and shining. Scobinae without the usual impressed pits in front of the rugose areas but the rugose areas are present and are large and broadly oval on the anterior segments and separated by a distance less than the cross diameter of one area; further back the size of the areas decreases and none are apparent much behind the middle of the body.

Last segment rather long and narrower than usual, the apex produced backward but not beyond the valves. The valves are but little inflated and the margins are thin but not separately raised. Preanal scale large and long-triangular.

Gonopods shown in figure 25, *a* and *b*.

Male with the coxae of legs 3 to 5 or 6 with distinct conic lobes. Seventh segment with the ventral surface raised and thickened behind the gonopods and with an excavation in the front face to receive their tips.

RHINOCRICUS CURTIOR Chamberlin

Rhinocricus curtior Chamberlin, Bull. Mus. Comp. Zoöl., **62**, p. 194, 1918.

The type locality, "Grande Riviere," probably refers to a river on the south coast of the southern peninsula near Jacmel. Many specimens collected in rotting yucca stumps above Kenscoff, June 24, 1934 by E. M. and H. F. Loomis. A mature male collected at Fond des Negre, April 4, 1930, C. One male and two females from foothills of Morne La Hotte, Oct. 1934, P. J. Darlington.

Unless otherwise noted the following remarks refer to the Fond des Negre specimen.

Body 50 mm. long and 5.2 wide.

Transverse constriction of the segments remarkably impressed on the dorsum of the anterior segments but decreasing toward the posterior end of the body and visible only on the sides of the last few segments. Lateral sutures evident only behind the constrictions and directly behind the pores, the sutures stronger on the caudal segments. In the Kenscoff specimens no lateral sutures are anywhere

evident. Scobinae extending onto segment 40; at the middle of the body they are represented by broad, transversely oval, pits, deeper behind, and followed by a larger striate area.

Eyes not separated by more than three times the diameter of one eye; composed of about 32 ocelli in 6 horizontal series, arranged 4, 5, 5, 6, 6, 6, counting downward from the top of the head. Antennal cones 4.

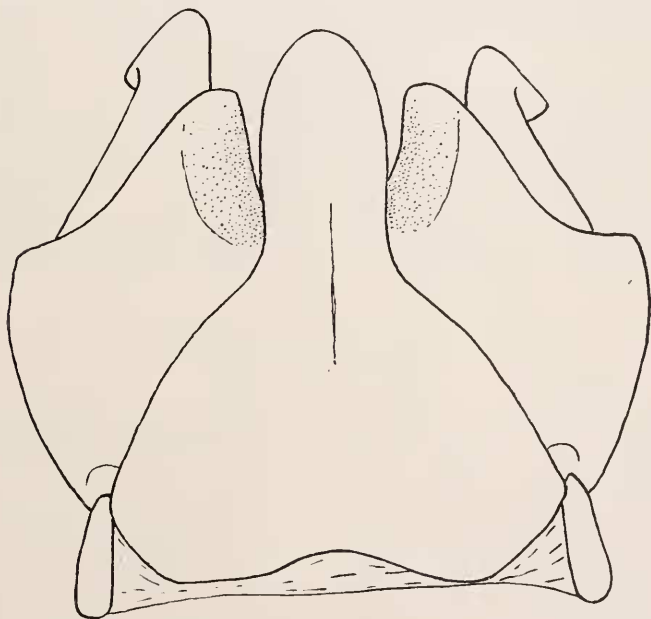


Fig. 26. *Rhinocricus curtior*. Gonopods, with anterior plates somewhat spread apart, anterior view.

Legs in front of the gonopods without special prominences. In the Kenscoff males the coxae of legs 3 to 5 are slightly lobed and all legs, except a few at the posterior end of the body, have a pad beneath the last joint. Legs 3 to 5 of Darlington's male are strongly lobed.

Seventh segment of the male with the ventral anterior margin greatly elevated and produced backward at the middle, the anterior face deeply cupped to receive the tips of the gonopods; the apex of the raised margin forming a high lip over the base of the coxae of the anterior legs of segment 8.

Gonopods as shown in figure 26.

RHINOCRICUS MEDIATOR Chamberlin

Rhinocricus mediator Chamberlin, Bull. Mus Comp. Zoöl., **62**, p. 189, 1918.

This species is known from the original collection at Furcy, and a male and female from Kenscoff, collected June 24, 1934 by E. M. and H. F. Loomis.

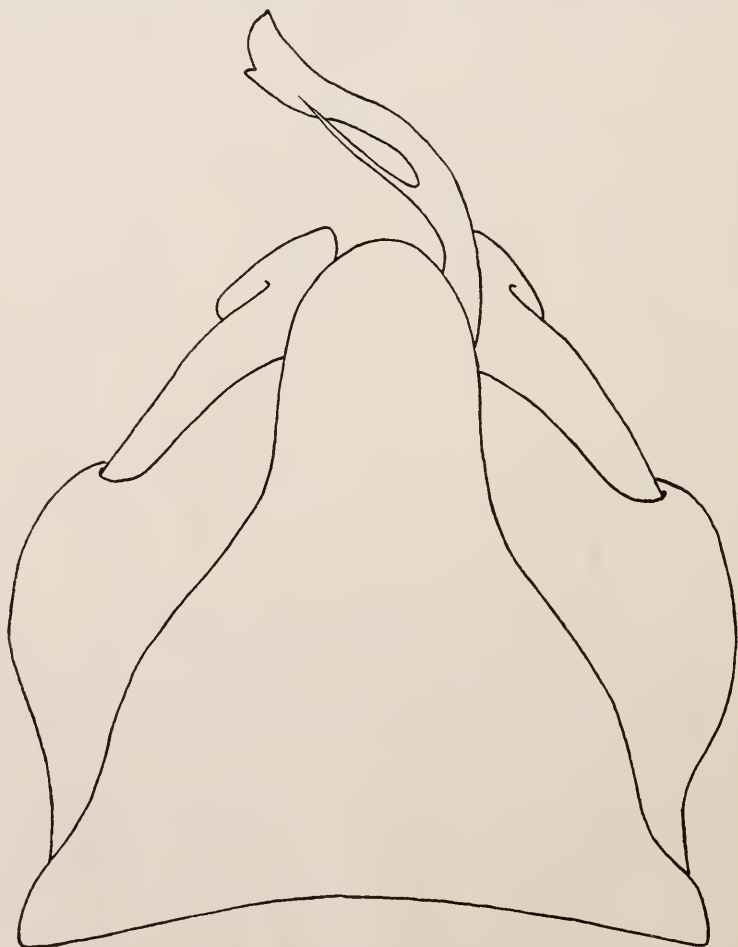


Fig. 27. *Rhinocricus mediator*. Gonopods of paratype, anterior view.

The following notes were made from a paratype male unless otherwise noted.

Number of segments 52.

Eyes circular, composed of about 41 small, uniform, ocelli neatly arranged in 8 longitudinal or 6 vertical series; antennal cones 4.

Posterior border of all segments straight and continuous, not bisinuate above the scobinae as stated in Chamberlin's key.¹ Scobinae round, followed by an elongate-oval striate area. In the Kenscoff specimens the scobinae are transversely oval and are followed by a broadly oval striate area. In these specimens the margins of the segments are straight as in the paratype.

Gonopods of paratype shown in figure 27.

Coxae of legs 3 to 7 somewhat produced, especially on the fifth legs.

Beginning with the third legs and extending to near the posterior end of the body the distal joint of each leg has a swollen pad on the under side.

Ventral surface of the seventh segment greatly elevated, the anterior face with a deep pit at middle to receive the tips of the gonopods.

RHINOCRICUS LETHIFER, new species

Plate 1, Fig. 2 & 3

Numerous specimens collected between Petit Goave and Miragoane, June 28, 1927 C. & L. Type in U. S. N. M. Paratype in M. C. Z.

Diagnosis. This is one of the largest of the West Indian millipeds, approximating *Cubocricus suprenans* Chamberlin from Cuba in length and being much thicker. It seems to have no close relatives in the islands and appears more closely allied to the Central American group containing *R. rixi* Pocock and *R. aposematus* Pocock which are of large size and have numerous antennal cones. The structure of the gonopods, last segment and anal valves would indicate relationship with *R. smithi* Pocock but that species has only 4 antennal sense cones and the scobinae extend to about the fourth segment from the posterior end of the body.

Description. Largest female 175 mm. long and 22.5 mm. broad; largest male 152 mm. long and 19 mm. broad. Number of segments 55 to 57.

Color in life deep chestnut brown throughout.

Head with median sulcus deeply and strongly impressed on the vertex, less so on the front and clypeus; transverse lines between the

¹ Proc. U. S. Nat. Mus., 61, p. 6, 1922.

bases of the antennae faintly impressed; front and clypeus quite smooth and shining, the vertex very coarsely rugose; margin of the corner of the head below the eye with a high thick rim. Eyes subtriangular, composed of 22 to 42 ocelli in 6 or 7 rows, the ocelli large, convex and very evident. Antennae moderately short, reaching little beyond the posterior margin of segment 1; sense cones numerous. Clypeus broadly and shallowly emarginate, with 2 fovea on each side.

First segment rather narrowly rounded laterally, with a raised margin extending from the lower part of the eye around the lateral angle.

Second segment with the anterior corner rounded below segment 1; ventral surface flat or slightly concave, strongly striate.

Ensuing segments with the transverse sulcus moderately evident on the sides, less so on the dorsum, the pore located just in front of it and below the lateral sulcus, which is very conspicuous on the mid- and hindbelt and less so on the forebelt; the pores near the middle of the side of the body, except on each side of segment 6 where the pore is far below the lateral sulcus (Fig. 28, *a.*). Forebelt very finely, transversely branched-striate. Mid- and hindbelts rather coarsely but indefinitely longitudinally rugate, except close to the posterior margin which is somewhat thickened. Scobinae beginning on about segment 8 and continuing to segment 26 or 27. Ventral striae equalling or slightly exceeding the tips of the legs. Pleurae over twice as wide as long and with 10 or 12 striae.

Last segment conspicuously narrowed caudad to an acute apex which equals or somewhat exceeds the summit of the anal valves; surface coarsely punctate, the caudal half very densely so; across the middle of the segment is a broad, indefinitely limited, impression.

Anal valves flattened and with very high, rather thin margins; surface coarsely punctate, the convex sides less densely so than the flat sides of the margins where the punctures are so closely placed that the surface appears extremely rugose. Preanal scale broadly rounded behind, the sides emarginate near the lateral angles (Fig. 28, *b.*).

Males with the coxae of the third legs produced into rather broad, thick subconic lobes; coxae of the fourth legs with lobes less produced but nearly twice as broad at the apex and slightly thicker; apex of the coxae of legs 5 and 6 broad but thin and scarcely produced; the coxae of the seventh legs broad and thick, not definitely produced. Apical joint of the anterior legs simple beneath, without a swollen pad.

Seventh segment of male with a somewhat elevated ventral crest, broadly and deeply emarginate at middle, in front; the posterior

margin produced caudad, nearly concealing the sternum of the legs of the eighth segment.

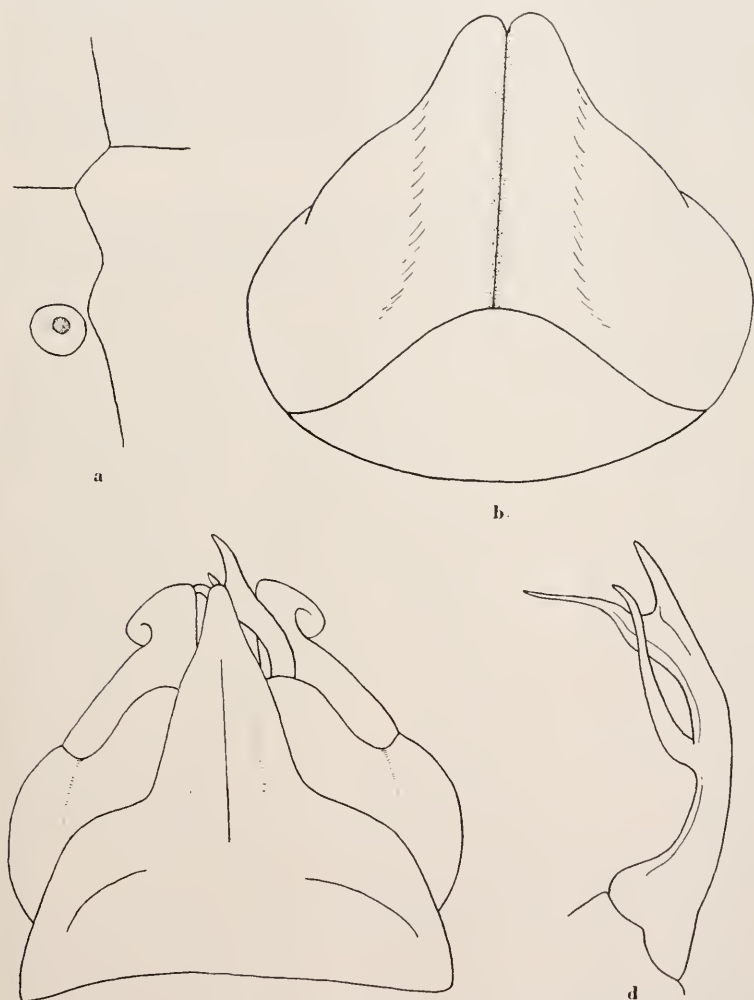


Fig. 28. *Rhinocricus lethifer*. a, Sutures and pore on the side of segment 6; b, anal valves and scale, ventral view; c, Gonopods, anterior view; d, Inner gonopod.

Gonopods as shown in figure 28, c and d.

This is one of the largest millipeds reported from the Western Hemisphere and is the largest member of the genus in the present restricted sense. The members of the family to which it belongs are provided with a disagreeably pungent fluid, which they usually emit in small droplets from a series of pores along each side of the body when disturbed. The caustic properties of this secretion have long been known to collectors, who, after handling the millipeds, have noted that the skin of their hands became discolored and later frequently peeled off in small areas.

Numerous specimens of this species were collected by O. F. Cook and the writer beneath fallen leaves in a wood on the side of a hill. In collecting the first specimens it was noticed that they were able to eject the repugnatorial fluid several inches from the body and that it caused a smarting sensation on the moist skin of the back of the hands and lower forearms, but no particular precautions were taken to avoid the fluid and collecting continued. However, in turning over the leaves, a large specimen was rolled into view on its side among the dead leaves and it instantly ejected its secretion upward a distance of about 18 inches into the face and left eye of the writer. The pain was instantaneous, intense, and of a burning and smarting nature, continuing for several hours in spite of the fact that the face and left eye had been immediately bathed in ice-water to remove the secretion and allay the pain. Swelling of the eyelid and cheek progressed rapidly and soon the eye was closed and remained so for several hours, after which the pain and swelling began to subside. The following morning the pain was gone but the eyelid again was swollen shut. The swelling was rapidly reduced by bathing the eye with cold water as was also necessary the second morning. On the day following the attack the skin of the cheek, forehead and eyelid had turned dark brown and was raised into blisters where the concentration of the secretion had been greatest. The blisters persisted nearly a week, after which the discolored skin peeled off without leaving any scars and no further ill effects were experienced.

Inquiries in the neighborhood elicited the fact that the natives were thoroughly familiar with the ability of this milliped to blind small animals, especially chickens that come upon the millipeds while scratching among the leaves. Chickens thus blinded were said never to recover and usually were killed forthwith by the owner, but where the injured chicken was allowed to die, death probably was caused by starvation rather than by any lethal substance in the repugnatorial fluid.

Insofar as is known this is the first record of injuries of a serious nature being caused to man or other animals by a diplopod.

While the emission of the repugnatorial fluid in pronounced jets is not known to have been reported for other members of the family, the size of many of the animals is sufficiently great to render them dangerous, should they possess the faculty, and they should be handled with care.

RHINOCRICUS ALBOLATUS new species

Seven males and two females collected at Kenscoff, June 24, 1934 by E. M. and H. F. Loomis. Type in U. S. N. M. Paratype in M. C. Z.

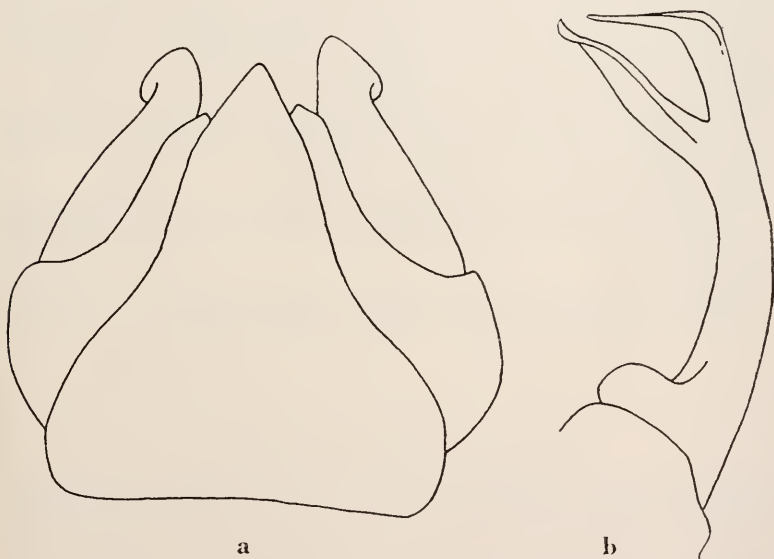


Fig. 29. *Rhinocricus albolatus*. a, Gonopods, anterior view; b, Inner gonopod.

Diagnosis. Although the gonopods denote closer association with *R. nigrescens* than any other Hispaniolan form now known, the proportions of the body and the almost complete lack of impressed sutures shows that this association is remote. This is the most slender Hispaniolan *Rhinocricus*.

Description. A relatively small and slender species reaching 42 mm. in length and only 3 mm. in maximum diameter. Number of segments 48 or 49.

Living color shining black above; sides below the pores with the posterior portion of each segment white, the remainder of the exposed surface black but maculate with tiny white spots.

Eyes small, widely separated, composed of 16 to 20 ocelli. Antennae with numerous sense cones.

First segment with the impressed marginal furrow short, not quite reaching the lower limit of the eye.

Ensuing segments with transverse sulcus faint on the sides, and seldom evident on the dorsum; no lateral sulcus anywhere evident. Surface strongly shining but with fine, short, longitudinal scratches visible with moderate magnification. Forebelt with annular striae very faint. Scobinae short but very broad, separated by about the diameter of one scobina; each followed by a striate area which is broader than long and rounded behind.

Last segment quite long, acutely pointed but exceeded by the anal valves which are evenly convex and without raised margins.

Gonopods as shown in figure 29, *a* and *b*.

Seventh segment of males with the ventral crest gradually raised from each side and moderately hollowed in front to receive the tips of the gonopods.

Males with the coxae of the pregenital legs unmodified. Terminal joint of all legs simple beneath, lacking inflated pads.

RHINOCRICUS CINCTUS new species

Two males collected on Morne La Hotte, Oct. 16-17, 1934 by P. J. Darlington.

Type and paratype in M. C. Z.

Diagnosis. Aside from the evident differences of the male gonopods this species may be distinguished from its closest relatives, *R. furcians* and *R. nigrescens*, by the very strongly impressed sulcus and smaller scobinae.

Description. Length 37 mm. width 3 mm.; number of segments 43 and 45. Body widest at segment 1, rather abruptly narrowed at the posterior end; males with segments 6 and 7 swollen and noticeably broader than the adjacent segments but not as broad as segment 1.

Color of the specimens almost black. Surface shining but with suf-

ficient magnification many fine, short, longitudinal scratches are visible.

Antennae short and stout; sense cones numerous. Eyes composed of 30 to 32 ocelli.

First segment broadly rounded on the sides, the raised margin short, barely reaching the lower corner of the eye.

Principal body segments with the transverse sulcus strongly and equally impressed on the sides and dorsum, curving sharply around behind the pore. Lateral sulcus sometimes slightly evident behind

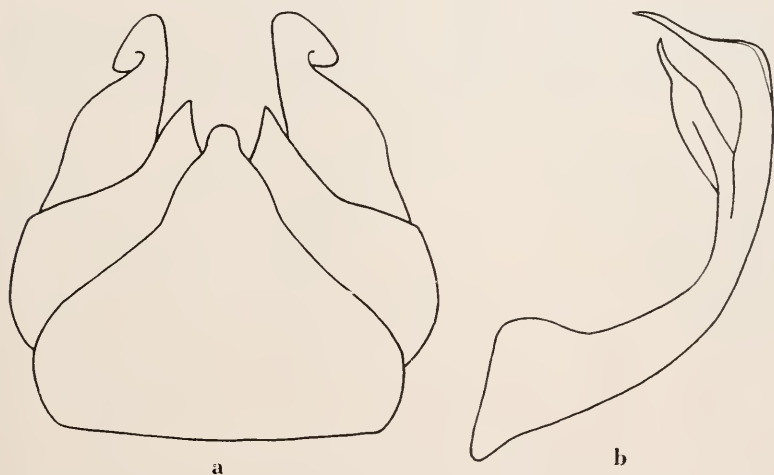


Fig. 30. *Rhinocricus cinctus*. a, Gonopods, anterior view; b, Inner gonopod.

the pores but not in front of them. Scobinae small, the pits oval-rounded and, on the anterior segments, followed by a rugose area only two or three times as large; on the segments further back the rugose areas decrease to the size of the pits or even smaller.

Last segment rather long, the apex rounded-acute, not exceeding the valves.

Anal valves scarcely inflated on the sides, the rather thin margins not separately raised. Preanal scale large, triangular.

Males with gonopods as shown in figure 30, a and b.

Males with pregenital legs lacking coxal lobes or pads beneath any of the joints. Seventh segment with the ventral surface elevated at the middle into a ridge which has the anterior face depressed.

RHINOCRICUS FURCIANUS Chamberlin

Rhinocricus furcianus Chamberlin, Bull. Mus. Comp. Zoöl., 62, p. 192, 1918.

Furey is the type locality.

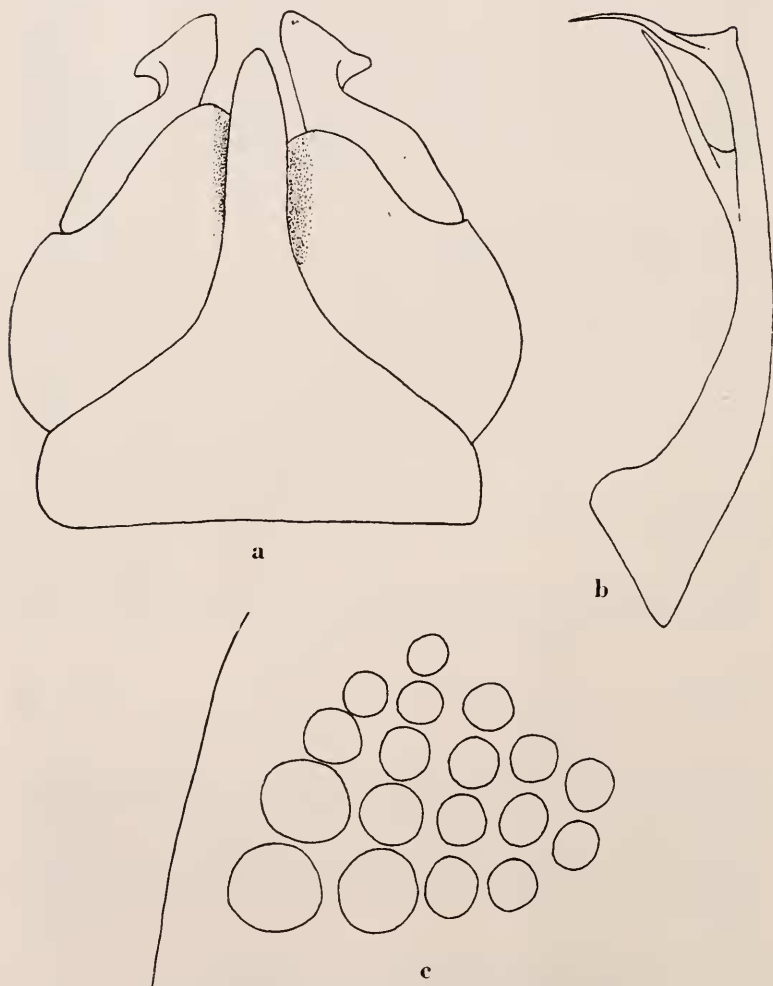


Fig. 31. *Rhinocricus furcianus*. a, Gonopods of paratype, anterior view; b, Inner gonopod of paratype; c, Eye-cluster.

In a paratype male of *R. furcianus* from the Museum of Comparative Zoölogy, the eyes contain 16 ocelli, of which the lower ones are

distinctly the largest. The scobinae are large and shallow and separated by a distance no greater than the width of one of them. The antennal cones are numerous. Gonopods shown in figure 31, *a* and *b*.

The National Museum collection contains 3 female specimens from 6100 ft., Mt. Noir, Haiti, Aug. 2, 1917, C. which appear similar to the paratype male. The eye of one of these specimens is shown in figure 31, *c*.

RHINOCRICUS NIGRESCENS Chamberlin

Rhinocriscus nigrescens Chamberlin, Bull. Mus. Comp. Zool., **62**, p. 195, 1918. Three mature males and two immature specimens collected between Petionville and Kenscoff, June 23, 1934, L. The type locality is Furey.



Fig. 32. *Rhinocriscus nigrescens*. *a*, Gonopods, anterior view; *b*, Inner Gonopod.

This appears to be a valid species closely related to *R. furcians* but with more segments, 46 to 48; more numerous ocelli; and different shaped gonopods, as shown in figure 32, *a* and *b*. The transverse sulcus is prominent on the sides of the body but does not cross the dorsum except very faintly on a few anterior segments. The scobinae are much the same as in *R. furcians* but are deeper. Antennal cones numerous.

RHINOCRICUS RAMULUS new species

One male collected at Roche Croix on Morne La Hotte at 5000 feet elevation, Oct. 13, 1934 by P. J. Darlington. Type in M. C. Z.

Diagnosis. The conspicuous peculiarities of this species are the slender antennae with fewer cones than other species in the group with numerous cones; and the long and very slender upper branch of the inner gonopods.

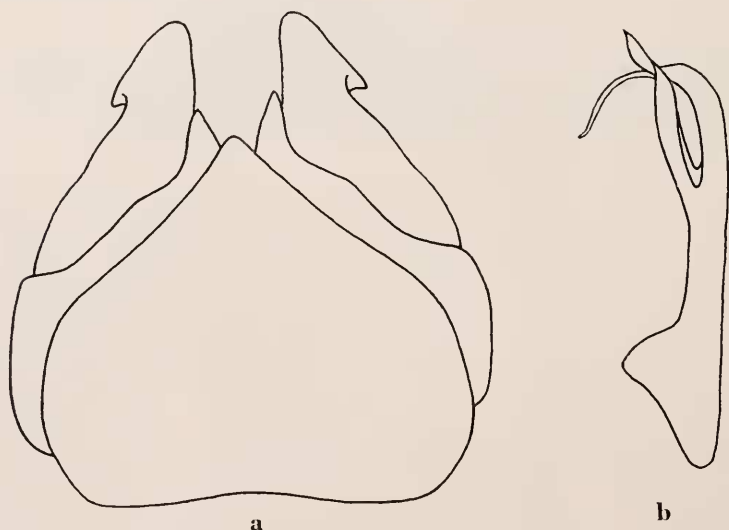


Fig. 33. *Rhinocriscus ramulus*. a, Gonopods, anterior view; b, Inner gonopod.

Description. Length 31 mm., width 3.5 mm. Number of segments 43. Body of uniform width from the first segment to within about seven segments of the posterior end.

Color of the alcoholic specimen light brown above, the sides adjacent to the pores and below them with lighter mottlings on the fore- and midbelts. First segment with a large transverse area of light maculations on each side of the middle.

Antennae quite slender for a species having numerous sense cones although the number of cones is less than in any other Hispaniolan species in the group, being about 12. Ocelli 25 to 29. Cardo of the mandibles with a prominent tooth at the lower anterior corner.

First segment rather narrowly rounded on the sides, the raised rim reaching somewhat above the lower corner of the eye.

Segments not constricted and with the transverse sulcus very faint on the sides of the body and still more so on the dorsum. Lateral sulcus lightly impressed behind the pores. Scobinae with the pits short but broad and deep, rather narrowly separated, followed by a subrectangular rugose area about as long as wide. Surface of segments shining, but very fine, short aciculations are evident under strong magnification.

Anal valves definitely and evenly inflated on the sides; the margins not separately raised.

The gonopods, as shown in figure 33, *a* and *b*, have the median plate more definitely cordate than in closely related species, and the upper branch of the inner gonopods is unusually long and more slender than in any other member of the genus.

Seventh segment with the ventral surface elevated at the middle into a conic prominence or ridge which is slightly concave on its front face.

The pregenital legs of the male lack coxal lobes or pads beneath the outer joints.

Order MEROCHETA

This order contains considerably more species than all the six other orders of millipeds found in Hispaniola combined. The species range from moderately sized, strongly armored animals, to very minute, delicate creatures, almost without color. Some of the larger species are handsomely colored, and show striking differences in the coloration of the segments which bear the repugnatorial pores, and those which do not. While the number of segments is limited to 18, 19 or 20, the structural variations that occur in this order show a range that is without parallel in any other order of millipeds. Eight families, one of them described for the first time, have been found in Hispaniola, and are characterized in the following key.

Key to the Hispaniolan families of Merocheta

Body short and broad, with carinae making a continuous descent from the highly arched dorsum; third segment greatly enlarged, the ones that follow have narrow carinae specialized to allow rolling into a ball for protection *Cyelodesmidar*

- Body remaining extended or coiled in an open spiral, not capable of being rolled into a ball; carinae usually not making a continuous descent from the dorsum, but extending away from it horizontally or obliquely.
- Dorsum narrow, with large, strongly ascending, thickened and knobbed carinae *Eoromidae* new
- Dorsum broader, the carinae horizontal or descending, and with thinner margins
- Last segment small and completely hidden from above by the penultimate segment *Hercodesmidae*
- Last segment larger and visible from above, beyond the penultimate segment.
- Body very strongly convex; carinae strongly depressed or set low on the sides of the segments; repugnatorial pores on special tubercles at the posterior corners of the carinae. . *Stiodesmidae*
- Body with the dorsum less convex, sometimes nearly flat; carinae usually high on the sides of the segment and more nearly horizontal; repugnatorial pores not on special tubercles on the margin of the carinae.
- Body compact, the anterior subsegments not exposed above; first segment concealing the head and antennae from above, the anterior part with 12 convex areas; lateral carinae projecting and hiding the legs, with 3 or 4 marginal, convex areas. *Chytodesmidae*
- Body rather loose-jointed, the anterior subsegments exposed above; first segment not concealing the head and antennae, the anterior part without definite, convex areas; lateral carinae projecting less, not completely hiding the legs, and without marginal, convex areas.
- Body with the dorsum nearly flat, surface somewhat setaceous, sometimes tuberculate or with distinct, convex areas; lateral carinae projecting nearly at the level of the back, the margins not thickened; repugnatorial pores usually on the dorsal surface of the carinae. *Polydesmidae*
- Body with the dorsum distinctly convex, smooth, and without definite, convex areas, lateral carinae at least slightly lower than the back; repugnatorial pores borne laterally in the thickened margin of the carinae.
- Second segment with each lateral carina lower than the lateral margins of the first and third segments and projecting forward beneath the angle of the first segment. *Strongylosomidae*

Second segment with the lateral carinae smaller, not projecting forward beneath the angles of the first segment, the margins continuous with those of the first and third segments.

Chelodesmidae

Family CYCLODESMIDAE

The family *Cyclodesmidae* has, till the present, been represented by a single genus containing a small number of species from several West Indian islands. The species reported in this paper more than double the known forms but unquestionably there are many undiscovered species in Hispaniola and some of the other islands. The species bear such great superficial resemblance to each other that possibly they may not have been collected as assiduously as millipeds with more striking differences. In the majority of species it has been found that the only satisfactory means of identification was by examination of the gonopods, with differences of size, coloration, surface sculpturing, segment shape, etc., seldom solely sufficient for purposes of classification.

While the individual Hispaniolan species are very restricted in distribution it is usual to find some members of the family in nearly every suitable location and the family offers an interesting opportunity for the study of distribution and evolution, but a better knowledge of the members, through extensive collecting in the unexplored parts of the island, first will be necessary.

In the material studied for this paper there were four species with several external characters so different from those prevailing in the genus *Cyclodesmus* that they appeared to form a natural group for which the new generic name *Lophocyclus* is proposed in reference to the large ridge on each side of segment three, the outstanding difference from *Cyclodesmus*.

The characters previously credited to this family require some amplification to allow the inclusion of the new species, as those which have erect setae on the surface of the segments, a prominent ridge on each side of segment three, or distally truncated carinae on segment 4.

CYCLODESMUS Humbert & Saussure

Most of the species have a smooth, shining surface entirely devoid of erect setae, and usually are found in the leaf mould, rolled into a compact ball for protection when they may easily be mistaken for pillbugs. When thus rolled the enlarged third segment conceals the

head and the first two segments on the sides. The third segment is without a ridge on either side parallelling the anterior margin. The lateral carinae of the fourth segment usually end in an acute angle but in some species the distal limits are distinctly rounded but lacking in anterior and posterior angles as in the genus *Lophocyclus*; all the species have a more or less distinct notch in the posterior margin above the angle. Carinae continuous in their descent with the dorsum. Anterior fourth of the dorsum not crossed by a transverse depression as in *Lophocyclus*.

The Hispaniolan species are separated in the following key which has been divided into two sections based on the proportions of the body.

Key to the Hispaniolan species of Cylodesmus

Body stout, nearly half as broad as long.

Antennae rather long and slender; apical joint of each gonopod long, slender, and without a distinctly evident sheath . . . *obesus* new

Antennae shorter and heavier; apical joint of each gonopod rather short and stout, the sheath distinct . . . *erassartus* new

Body more slender, three or four times longer than broad.

Surface of the segments with many short, erect setae giving the body a fuzzy appearance . . . *setosus* new

Surface of the segments usually without any erect setae . . .

Segments, except a few at each end of the body, with the posterior margins above the lateral angles distinctly incised, the sinus dentate . . . *incisus* new

None of the segments with the posterior margin incised . . .

Body small, not exceeding 6 mm. in length; basal joint of each gonopod produced at the distal end above, into a long, erect conic lobe . . . *globulus* new

Body larger, exceeding 6 mm. in length; basal joint of each gonopod simple, not lobed . . .

Gonopods with each apical joint very simple, lacking a definite sheath-like outer piece, the joint straight and held parallel with the body . . . *nudatus* new

Gonopods with each apical joint equipped with a distinct outer sheath, the apex of the joint bent outward or toward the body . . .

Gonopods with the sheath-like piece highly developed, separated from the principal or terminal joint and bent toward the body beneath it . . . *haitianus* Chamberlin

- Gonopods with the sheath-like piece less highly developed and usually adnate throughout its length to the terminal joint.
- Gonopods with the apex of each outer joint bent toward the body but not outward; sternum of the pair of legs following the gonopods narrower than the diameter of a leg socket; angles of segment 2 reaching opposite those of segment 1.
angustipes new
- Gonopods with the apex of each outer joint bent more or less laterad; sternum of the pair of legs behind the gonopods wider than one of the leg sockets; angles of segment 2 not reaching opposite those of segment 1.
- Gonopods with the projection beyond the sheath of each outer joint quite short and curved slightly toward the body.
enneryensis new
- Gonopods with the projection beyond the sheath of each outer joint long, produced laterad more strongly than toward the body.
- Body not exceeding 8 mm. in length; the sheath of each apical joint of the gonopods with a distinct tooth at the apex on the outer side.*insulanus* new
- Body 10 to 13 mm. long; sheath of each apical joint of the gonopods not toothed at the apex.
- Gonopods rather short and stout, the falcate portion beyond each sheath very broadly expanded at the base; sternum of the pair of legs behind the gonopods little wider than a leg socket.*falcarius* new
- Gonopods long and quite slender, the falcate portion slender beyond each sheath; sternum of the pair of legs behind the gonopods nearly twice as wide as a leg socket.
- Terminal portion of each gonopod beyond the sheath quite evenly uncinatc, the tip simply acuminate.*montanus* new
- Terminal portion of each gonopod bent sharply outward at a right angle beyond the sheath, the tip bifurcate.*rubellus* new

CYCLODESMUS CRASSARTUS new species

A single male collected with *C. obesus* at Fond des Negre, April 4, 1930, C. Type in U. S. N. M.

Diagnosis. Most closely resembling *C. obesus* in shape but with the sides of the head notched on each side, the antennae definitely stouter, and the gonopods stouter and with a distinct sheath. The gonopods show some similarity with those of *C. angustipes* but the apical joint

is straighter and a little heavier and the distal end is shorter and does not bend toward the body.

Description. Length 13 mm., width 6 mm. Surface smooth and shining, with fine reticulations and sparse, tiny, and faint longitudinal aciculations.

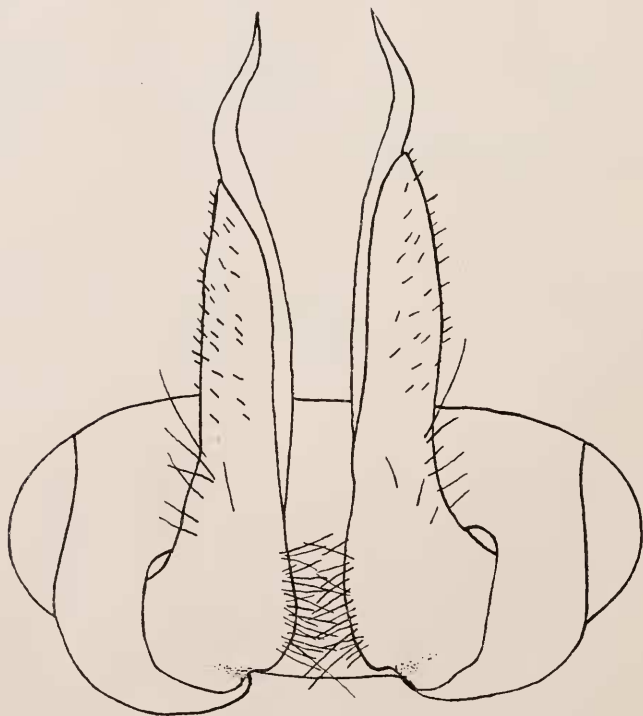


Fig. 34. *Cyclodesmus crassartus*. Gonopods.

Head with the groove of the vertex of uniform depth and width throughout; lateral margin with a deep notch at the middle, with a thin indistinct rim along the margin behind it, but none in front of it. Antennae separated by somewhat more than the diameter of one of the sockets; short and stout as compared to *C. obsus*, joints 2 to 5 inclusive subequal in length, but with joint 6 definitely longer.

First segment emarginate in front, the lateral angles but slightly produced forward, more squarely rounded than in *C. obsus*.

Second segment with each lateral angle narrowly produced to or beyond the angles of the first segment, the raised anterior rim of the angles high and thick.

Third segment with the raised anterior rim broad and high, flattened and broadened at the middle of the dorsum.

Fourth segment with the lateral margin elongate-rounded, the raised rim very broad, including all the surface below the deep notch of the posterior margin.

Ensuing segments conforming to the general pattern of the other species.

Gonopods shorter and stouter than those of *C. obesus*, the apical joint with a distinct outer sheath, finely hairy above and with longer hairs near the base on the outer side; terminal portion short, slenderly acute, extending nearly straight forward (Fig. 34). Genital aperture broadly oval.

Coxae of the 5 pairs of legs in front of the gonopods each with a tuft of long hairs at the apex.

Sternum of the pair of legs following the gonopods narrower than the diameter of a leg socket.

CYCLODESMUS OBESUS new species

One male (type) and 2 females collected at Fond des Negre, April 4, 1930. *C.*
Type in U. S. N. M. Paratype in M. C. Z.

Diagnosis. This and the correspondingly shaped *C. crassartus* are by far the broadest members of the genus in proportion to their length and in this particular do not appear to be closely related to the other known species. From the form of the gonopods *C. obesus* might be considered as somewhat intermediate in relationship between *C. nudatus* and *C. crassartus*, as shown in the drawings.

Description. Length of the male type 14 mm., width 6 mm.; largest female 16 mm. long and 7 mm. broad. Surface as in *C. crassartus* with the longitudinal aciculations somewhat more numerous and evident.

Head with the groove of the vertex deep, broadening in front above the antennae. Margin of the head on either side in front continuous, rounded, and with a definite raised rim. Antennae separated by considerably more than the diameter of one of the sockets, in shape rather long and slender; joints 2, 3, 5, and 6 subequal in length; joint 4 slightly shorter.

First segment deeply emarginate in front; the lateral angles distinctly produced forward, rounded-acute.

Second segment as in *C. crassartus* but with the raised anterior rim of the produced angles weaker than in that species.

Ensuing segments showing no conspicuous differences from the same segments of *C. crassartus*.

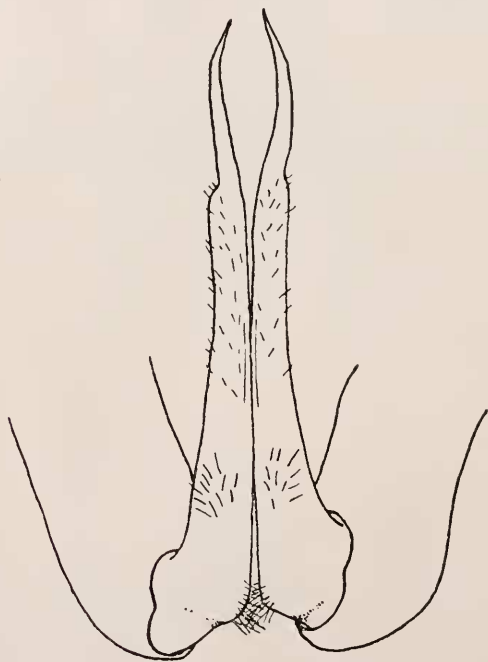


Fig. 35. *Cyclodesmus obesus*. Gonopods.

Gonopods simple and slender, the outer joint of each without a definitely delimited sheath, the rather short, slender, apical portion continuous with the slightly hairy basal portion (Fig. 35). Aperture from which the gonopods arise subrectangular in outline.

Coxae of the 5 pairs of legs just in front of the gonopods with hairs as in *C. crassartus*.

Sternum of the pair of legs following the gonopods narrow as in *C. crassartus*.

CYCLODESMUS NUDATUS new species

One male and two immature females collected at L'Archaie, July 6, 1927, C. & L. Type in U. S. N. M. Paratype in M. C. Z.

Diagnosis. Apparently intermediate between *C. angustipes* and *C. obesus* as is shown by the form of the gonopods and the narrow sternum of the pair of legs behind them. The gonopods differ from

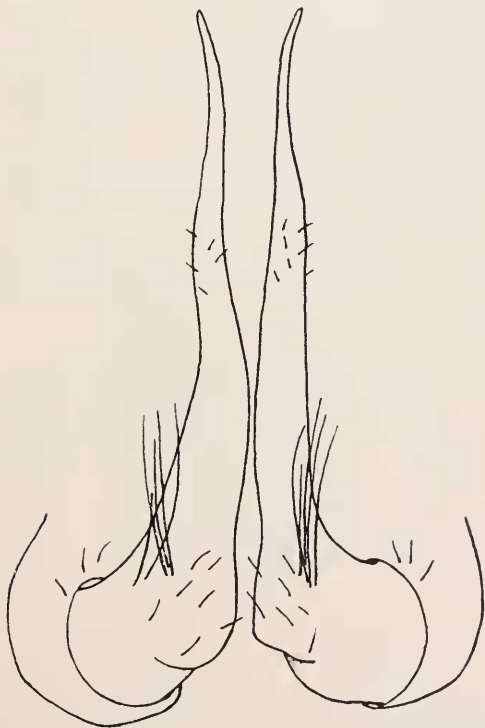


Fig. 36. *Cyclodesmus nudatus*. Gonopods.

those of *C. angustipes* in being horizontal and without an apparent outer sheath, and there is a small tuft of very long hairs at the base of each apical joint. In many particulars the gonopods resemble those of *C. obesus*, but the very much more slender body of this species distinguishes it from *C. obesus*.

Description. Length of the type 9 mm. and the width 2.5 mm. Surface smooth and shining, with the usual fine reticulations.

Head with the groove of the vertex long and quite deep. Antennae more widely separated than one of the sockets.

First segment shallowly and broadly but definitely emarginate in front, with the raised rim narrow but quite high; lateral angles rather broadly rounded.

Second segment with the lateral angles not reaching opposite those of the first segment.

Third segment with the raised margin thick and high, the surface immediately behind its limiting furrow depressed in a broad band which is crossed by a few raised lines extending obliquely downward to the furrow.

Fourth segment with each lateral margin rather broadly rounded, subelongate, the posterior margin above it with a tiny but sharp indentation.

Ensuing segments, to near the caudal end of the body, with the anterior surface on each side above the lateral margin depressed for a distance to receive the overlapping posterior margin of the segment in front, when the body is rolled into a ball.

Gonopods very simple, the apical joint horizontal, long, and greatly attenuated, especially the distal third; lacking a distinct outer sheath, although a few tiny hairs near the middle of the joint may indicate that the usual hairy sheath is, in this species, rudimentary and coalesced to the inner portion of the joint; base of each apical joint with a small tuft of very long erect hairs (Fig. 36).

Sternum of the pair of legs behind the gonopods narrower than the transverse diameter of one of the leg sockets.

CYCLODESMUS ANGUSTIPES new species

Two males and many females were collected near Trouin, June 22, 1927, C. & L. Additional specimens from the same locality June 26, 1934, by E. M. and H. F. Loomis. Type in U. S. N. M. Paratype in M. C. Z.

Diagnosis. Seemingly close to *C. haitianus* but with different gonopods. From other species of similar body-form it may be separated by the narrow sternum of the pair of legs following the gonopods, and by the slender simple gonopods, which bend downward toward the body and are protected for over half their length by the outer sheath.

Description. Body of the largest specimen, a female, 12 mm. long

and 3.5 mm. broad; surface smooth and shining but low magnification shows fine reticulations.

Head with groove of the vertex long and quite deep. Antennae separated by more than the diameter of one of the sockets.

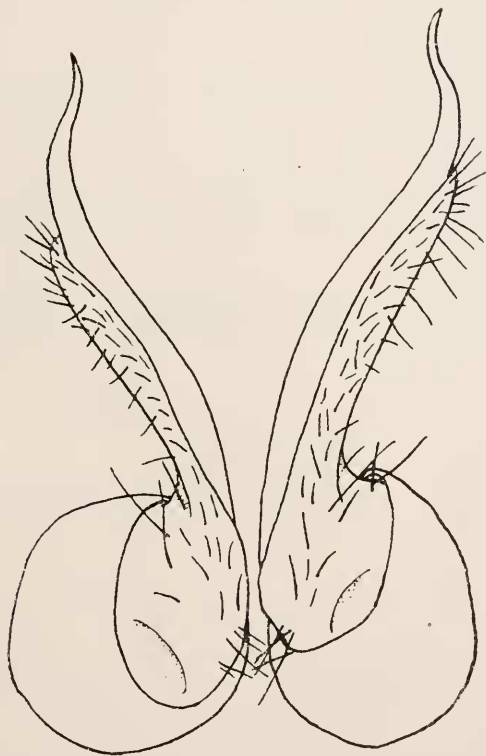


Fig. 37. *Cyclodesmus angustipes*. Gonopods.

First segment very indefinitely emarginate in front, the angles rather broadly rounded.

Second segment with the angles equalling or slightly surpassing those of the first segment.

Third segment with the surface behind the raised margin of uniform height, usually without a broad depressed band paralleling the margin as in *C. cuneryensis*.

Fourth segment with the lateral margin somewhat elongate-rounded, not acute, and with a slight indentation in the posterior margin above the angle.

Fifth and sixth segments with the anterior surface above the lateral angles depressed for a considerable distance beneath where the segment in front overlaps, when the body is rolled up; lateral margin of each segment broadly rounded.

Gonopods with the sheath of each erect piece reaching over half way to the apex of the inner portion, which bends gradually toward the body, beyond the sheath, and is very slender; the sheath with scattered hairs from base to apex (Fig. 37).

In the male type the coxa of each fourth leg is produced into a low rounded tubercle at tip, bearing a few long hairs, while in the other male specimen the inner angle of each coxa is prominent but not definitely elevated.

Sternum of the pair of legs immediately following the gonopods especially narrow, not as wide as the transverse diameter of one of the leg sockets.

CYCLODESMUS INCISUS new species

Plate 3, Fig. 1 & 2

Two males and three females collected at Port au Prince, May 19, 1927, L.

Six females collected at Diquini, June 27, 1927. L. Type in U. S. N. M.

Paratype in M. C. Z.

Diagnosis. Differing from other Hispaniolan species in having the posterior margin of the segments incised above the lateral angle, especially on segments 11 to 14, and the margin of the incision dentate. *C. porcellanus* Pocock, from Jamaica, is the only other species with incised posterior margins but the incisions are not dentate and the body is of larger size than *C. incisus*.

Description. Length 6 to 8 mm., width 1.5 to 1.7 mm. Surface smooth and slightly shining and with moderate magnification is seen to be finely reticulated.

Head with the groove on the vertex not especially pronounced. Antennae separated by slightly more than the diameter of one of the sockets.

First segment broadly and shallowly emarginate in front; lateral angles much more broadly rounded than in the other species.

Second segment with the angles quite narrowly produced to opposite the angles of the first segment.

Third segment of the usual shape, the raised margin a little thicker than ordinarily.

Fourth segment with a faint indentation in the posterior margin just above the lateral angle.

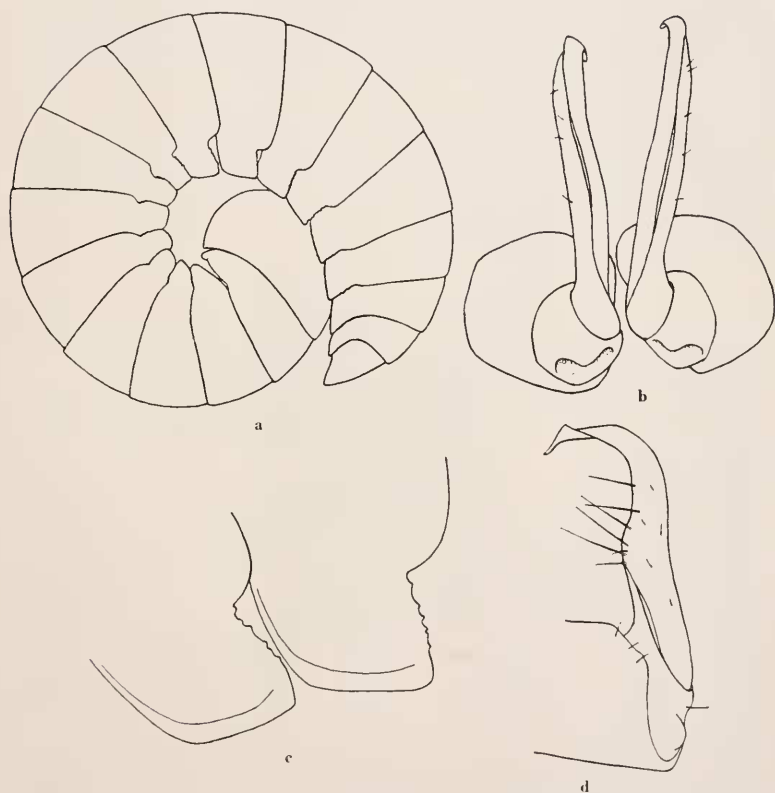


Fig. 38. *Cyclodesmus incisus*. a, Partially rolled body with segments in outline, lateral view; b, Lateral carinae of segments 12 and 13; c, Gonopods; d, Gonopod, outer lateral view.

From segment 4 or 5 to about segment 17 the posterior margin is cut away for a considerable distance above the lateral angle on each side, the excisions most extensive and conspicuous from segment 11 to 14, on either side of which they decrease in depth but not in extent,

the margin of the excisions with 3 to 8 small subequal teeth; similar teeth are present on the posterior margin of the antepenultimate and penultimate segments, although no excisions of the margin are evident (Fig. 38, *a* and *b*).

Gonopods long, slender and quite simple, the acute apex bent downward toward the body; outer sheath-like part of the erect portion very slender and indistinctly separated from the inner part, when viewed from above, and when viewed from the side it appears to be distinct from it (Fig. 38, *c* and *d*).

Coxae of the third legs of the males produced forward into rather long cylindrical lobes.

Sternum of the pair of legs behind the gonopods not as wide as the diameter of one of the leg sockets.

CYCLODESMUS GLOBULUS new species

One male and six females collected between Leogane and Petit Goave, June 28, 1927. C. & L. Type in U. S. N. M. Paratype in M. C. Z.

Diagnosis. Not only is this the smallest member of the genus but in no other species is the basal joint of each gonopod produced above into a long conic lobe.

Description. The type, a male, is 5.3 mm. long and 1.2 mm. broad; the largest female is 6 mm. long and 1.5 mm. broad.

Surface smooth and shining but with high magnification is seen to be very finely and faintly reticulated.

Head with a moderately deep groove on the vertex. Antennae separated by about the diameter of one of the sockets.

First segment inconspicuously emarginate in front; lateral angles rather abruptly rounded.

Second segment with the lateral angles reaching almost opposite those of the first segment.

Third and fourth segment of the usual shape, the latter with a very tiny nick in the back margin just above the lateral angle.

Segments with the lateral margin changing from acutely rounded on segment 5 to broadly rounded on segment 9; from segment 10 to the penultimate segment the lateral margin is lengthened and anterior and posterior angles are formed.

Gonopods as shown in figure 39, long and slender, the apex of each greatly attenuated and bending gradually downward toward the body; sheath-like piece showing as a long scale on the outer side of the

apical portion; base of each erect piece with a large conic elevation in front, bearing one or two very long hairs and numerous short ones. Basal joint of each gonopod produced at the distal end above into a long, incurving, horn-shaped lobe reaching a third of the way up the apical piece.

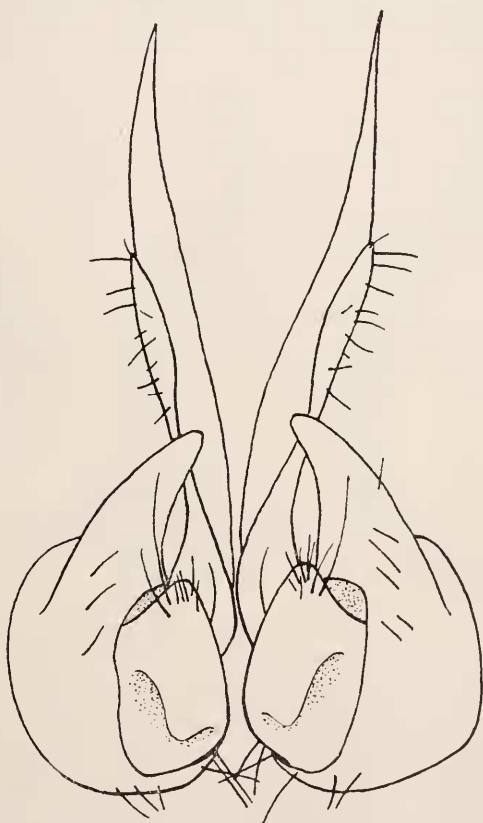


Fig. 39. *Cyclodesmus globulus*. Gonopods.

Males with the coxae of the third legs produced into low rounded knobs directed slightly forward.

Sternum of the pair of legs immediately behind the gonopods as wide as the transverse diameter of one of the leg sockets.

CYCLODESMUS ENNERYENSIS new species

Two males and 4 females collected at Ennery, July 7, 1927, C. & L. Type in U. S. N. M. Paratype in M. C. Z.

Diagnosis. Closely related to *C. montanus* and *C. insulanus* but with the gonopods notably different as shown in the drawings. The sternum of the pair of legs behind the gonopods is nearly twice as wide as one of the leg sockets.

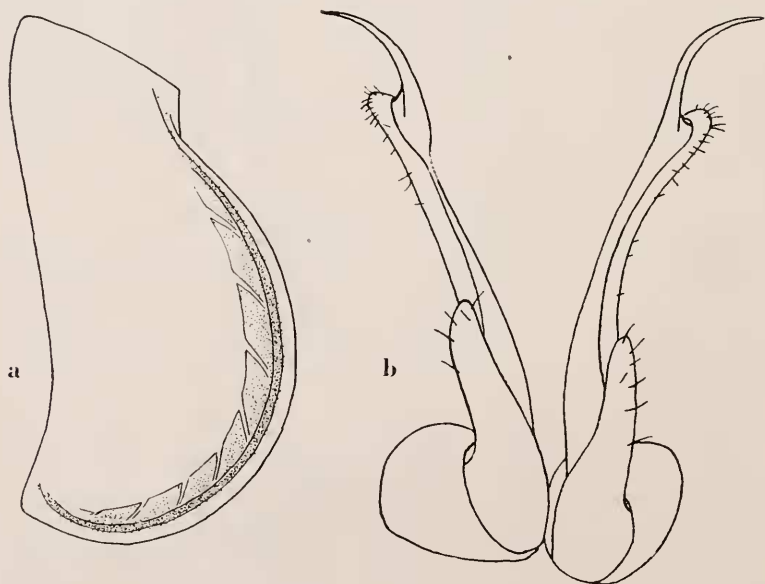


Fig. 40. *Cyclodesmus enneryensis*. a, Segment 3, lateral view; b, Gonopods.

Description. The largest specimen, a female, is 10 mm. long and 3 mm. broad. Surface smooth and shining with the usual fine reticulations.

Head with the groove on the vertex rather short, but broad and quite deep. Antennae separated by considerably more than the diameter of one of the sockets.

First segment shallowly emarginate in front, the angles moderately broadly rounded.

Second segment with the angles not reaching opposite those of the first segment.

Third segment with the raised margin thick and high, followed by a deep, narrow furrow, behind which is a broad depressed band similar to that in *C. insulanus* but more extensive than that in *C. nudatus*, as it reaches almost to the posterior margin above the angle (Fig. 40, a).

Fourth segment with the lateral angle on each side broadly rounded, the posterior margin nicked above the angle.

Ensuing segments to about the seventeenth with the anterior surface, above the lateral angles, depressed to receive the posterior portion of the segment in front, when the body is rolled up.

Gonopods long and very slender, with the sheath of each apical joint reaching almost to the tip of the inner piece and with a distinct shoulder at the apex on the outer side; viewed from directly above, the anterior face of the sheath at base is very prominent, forming what appears to be a long, cylindrical lobe reaching nearly half way up the sheath and with only a very few fine hairs; inner piece of each gonopod with the apex bending downward, toward the body, and outward, and with the tip very fine (Fig. 40, b).

Sternum of the pair of legs behind the gonopods nearly twice as wide as the transverse diameter of one of the leg sockets.

CYCLODESMUS INSULANUS new species

A male and a number of females and immature specimens collected on the Ile de Cabrit, near Bayeux, May 12, 1927, L. An immature male collected on the same island July 13, 1927, L. Type in U. S. N. M. Paratype in M. C. Z.

Diagnosis. The very wide sternum of the pair of legs following the gonopods and the sharp tooth at the apex of the sheath-like piece of each gonopod are characters not combined in any other species.

Description. The largest specimen, the male type, is 8 mm. long and 2 mm. broad.

Head with the groove on the vertex not very deep or conspicuous. Antennae separated by more than the diameter of one of the sockets.

Surface of the body smooth and shining as usual.

First segment with the anterior margin almost straight across, very faintly shallowly emarginate when viewed from directly above; raised rim uniform in width throughout, reaching around the corners, which are rather broadly rounded.

Second segment with the angles not reaching opposite those of the first segment by a considerable distance.

Third segment of the usual form, the raised rim rather thick, with a narrow furrow behind it, a broad band just behind the furrow somewhat elevated above it but lower than the rest of the surface, this band crossed with raised lines extending from the higher surface obliquely downward to the furrow.

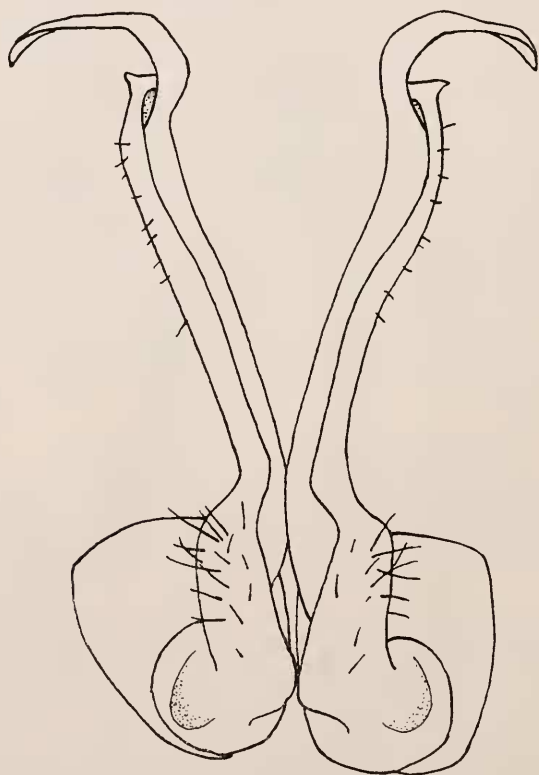


Fig. 41. *Cyclodesmus insulanus*. Gonopods.

Fourth segment with each lateral angle acute; the posterior margin obliquely nicked above the angle to receive the anterior edge of the fifth segment, near the angle, when the body is rolled up.

Fifth segment with the lateral corner on each side rather broadly rounded, the corner of the segment thereafter becoming more obtuse,

and from segment 10 to the penultimate inclusive with anterior and posterior angles formed.

Gonopods long and slender, the inner piece of each gonopod bent sharply outward above the end of the outer sheath-like piece, the apex quite slender; sheath with a small sharp tooth at the apex on the outer side, the base of the sheath enlarged but not developed into a lobe or tubercle, the surface with rather long scattered hairs (Fig. 41).

Coxae of the third and fourth male legs normal.

Sternum of the pair of legs immediately behind the gonopods equal to at least twice the transverse diameter of one of the leg sockets.

CYCLODESMUS MONTANUS new species

Two males and several females collected on Morne Pilboreau, above Ennery, May 24, 1927. L. Type in U. S. N. M. Paratype in M. C. Z.

Diagnosis. The position of this species seems to be intermediate between *C. insulanus* and *C. rubellus*. It differs from *C. insulanus* in lacking a tooth at the apex of each sheath of the gonopods, and is readily distinguished from *C. rubellus* by having the apex of each gonopod forming an almost uniformly curved, acute tipped hook; the outer sheath is much better developed than in *C. rubellus*.

Description. The largest specimen, a female, measures 13 mm. long and 3 mm. broad. Surface of the body smooth and shining.

Head with the groove of the vertex long and not especially deep. Antennae not separated by a distance greater than the diameter of one of the sockets.

First segment shallowly emarginate in front, the angles rather acutely rounded.

Second segment with the angles remote from those of the first segment.

Third segment not noticeably different from that of *C. enneryensis*.

Fourth segment with each lateral corner acute; posterior margin above the angle with a deep and oblique notch to receive the edge of the fifth segment, when the body is rolled up.

Lateral margins increasingly more broadly rounded from segment 5 to segment 8 inclusive, segment 9 with anterior and posterior lateral corners slightly angled but becoming more so on the ensuing segments. From segment 5 to the middle or posterior quarter of the body the segments have the anterior surface depressed for a distance above the

lateral margin to accommodate the overlapping segment in front, when the animal rolls itself into a ball.

Gonopods long and slender, the sheath of each outer joint distinct, and with the slender, falcate tip of the inner piece proceeding from its

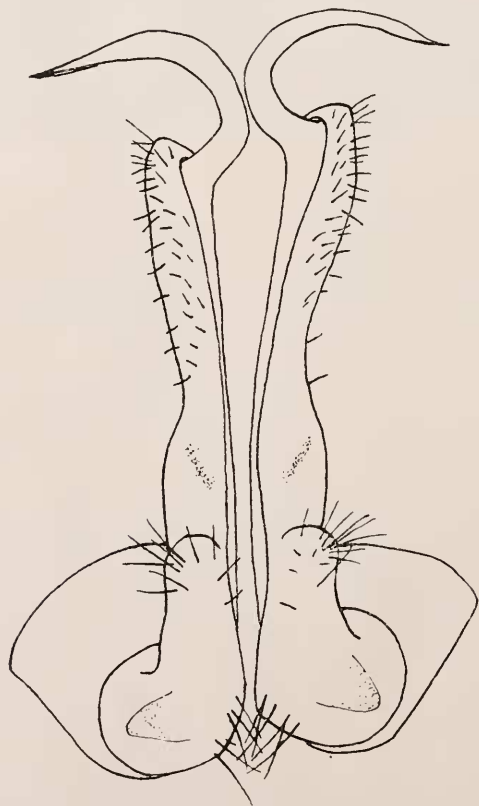


Fig. 42. *Cyclodesmus montanus* Gonopods.

inner side, just below the apex, and curving forward and outward; base of the sheath rather prominently elevated for a short distance, the distal end of the elevation with a few long hairs (Fig. 42).

Sternum of the pair of legs behind the gonopods nearly twice as wide as the transverse diameter of one of the leg sockets.

CYCLODESMUS RUBELLUS new species

Numerous males (one the type) and females collected at Le Borgne, on the north coast, March 26, 1930. C. Type in U. S. N. M. Paratype in M. C. Z.



Fig. 43. *Cyclodesmus rubellus*. Gonopods.

Diagnosis. This species is at the extreme end of the series having the apical portion of the terminal joint of each gonopod slender and held at a right angle to the basal portion. Its closest relatives are *C. insulanus* and *C. montanus* but the apical portion of each gonopod is much more slenderly produced and ends in a distinct fork of two fine, equal prongs.

Description. Length of the largest specimen, a female, 13 mm., width 3.5 mm. Surface smooth and shining, the reticulations faint, requiring moderately high magnification to be seen.

Color pink in life, slightly so in alcoholic specimens.

Head with the groove of the vertex deep, crossed by numerous fine, short, transverse impressions. Antennae long, slender, separated by slightly more than the diameter of a socket; joints 3 and 6 subequal, longer than joints 2, 4 or 5, which are of equal length.

First segment broadly emarginate in front; the raised margin strongly developed; lateral angles rather sharply rounded.

Second segment with the lateral angles not quite reaching the angles of the first segment.

Third segment with the raised anterior margin thick and high, the surface immediately behind its posterior limiting furrow depressed and crossed obliquely downward from behind by a few raised lines as shown in the drawing of *C. enneryensis*.

Fourth segment terminating on each side in a rather sharp angle which is caused to appear produced backward by the indentation in the posterior margin just above it.

Ensuing segments with the anterior lateral surface on each side depressed in the usual way to receive the posterior portion of the segment in front, when the body is rolled for protection.

Each gonopod with the basal joint long, smooth, and cylindric; the terminal joint slender, bowed toward the body, sheath closely applied and with a few very short hairs; apical portion of the joint directed laterad, forming a right angle with the supporting portion, in shape very long and slender, the outer half curving toward the body and the apex divided into two fine, subequal prongs (Fig. 43).

Sternum of the pair of legs following the gonopods considerably broader than the diameter of the leg socket on either side.

CYCLODESMUS FALCARIUS new species

Several male (one the type) and female specimens collected on Morne Pilboreau, above Ennery, April 5, 1926, C.; July 8, 1927. C. & L. Type in U. S. N. M. Paratype in M. C. Z.

This species is of the same size and form as *C. montanus*, collected in the same locality, but the following differences exist.

Head with the groove of the vertex long but quite faint. Antennae separated by slightly less than the diameter of one of the sockets.

Segment 4 with each lateral angle scarcely as acute as in *C. mon-*

tanus and with the posterior margin much less deeply and obliquely notched above the angle.

Gonopods shorter and stouter than those of *C. montanus*, the sheath of each outer joint not terminating in a distinct shoulder, separate

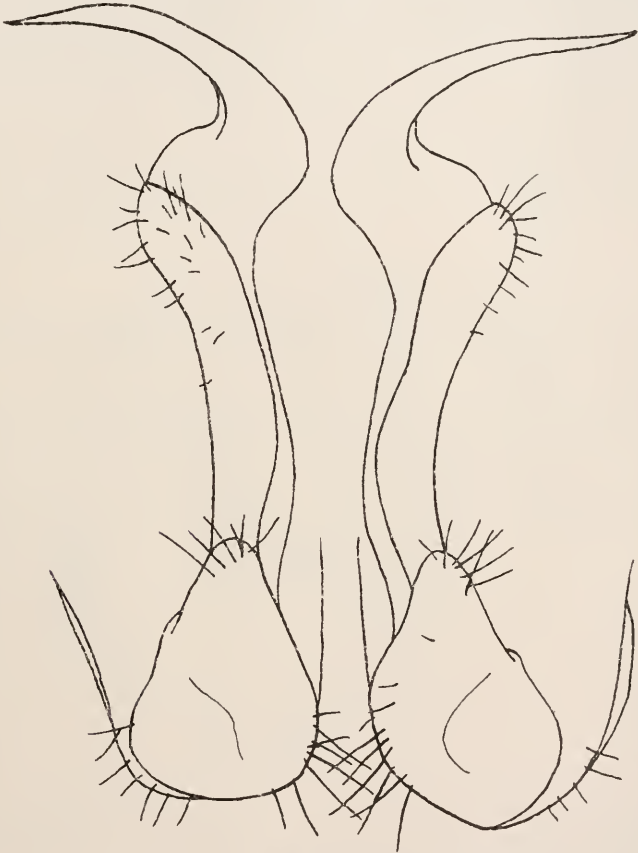


Fig. 44. *Cyclodesmus falcarius*. Gonopods.

from the inner piece, but continuous with it; inner piece with the falcate extension beyond the sheath very broadly expanded at base, above which it curves abruptly outward to an acuminate ending (Fig. 44).

Sternum of the pair of legs behind the gonopods but little wider than the transverse diameter of one of the leg sockets.

CYCLODESMUS HAITIANUS Chamberlin

Cyclodesmus haitianus Chamberlin, Bull. Mus. Comp. Zool., **62**, p. 215, 1918.

Chamberlin listed Diquini and Petionville as localities for this species but no specimens were found by the writer in either place and, as the species was based on females, its identity remained in doubt until June 23, 1934 when the writer collected, at Kenscoff, specimens of

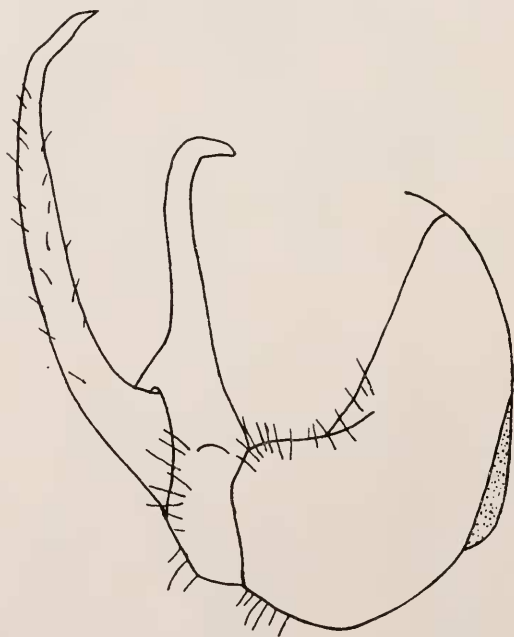


Fig. 45. *Cyclodesmus haitianus*. Gonopod, oblique outer view.

both sexes which appeared to represent this species. The following notes were made from these specimens.

The largest specimen is a female 16 mm. long and 5 mm. wide.

First segment with the anterior margin straight across.

Second segment with lateral angles not reaching opposite those of the first segment.

Third segment with a submarginal depressed area such as found in *C. eneryensis*.

Fourth segment with the lateral margin acute; posterior margin notched above the angle.

Most of the specimens show a very few scattered erect setae close to the back margin of the posterior segments, and on the other segments single setae here and there indicate that in perfectly preserved specimens all segments would have a few setae, but by no means the numbers as on *C. setosus*.

Gonopods with the usual sheath-like portion more highly developed than in the other species and distinctly separated from the principal joint and held beneath it, with the apex curved outward (Fig. 45).

The males have the last joint of all legs, to near the back end of the body, densely pubescent beneath, in conspicuous contrast to the rather sparse pubescence on the female legs.

CYCLODESMUS SETOSUS new species

One female collected between 6000 and 7000 feet elevation at La Vestite, Sept. 16 to 23, 1934 by P. J. Darlington. Type in M. C. Z.

Diagnosis. The numerous dorsal setae make this species instantaneously recognizable but the shape of segment 1 also is distinctive.

Description. Length 16 mm. width 4 mm. the body rather narrow for its length; lateral carinae continuous with the sides, descending vertically. Color white. Surface beset with erect setae giving the body a fuzzy aspect, the setae rising from conspicuous dark follicles, possibly darkened by the alcoholic preservative.

Head sparsely hairy below the antennae; a few hairs directly above each of the sockets; groove of the vertex deep.

First segment almost semi-circular, the anterior margin straight across, the lateral margins curved and almost continuous with the posterior margin; segment slightly over twice as wide as long; lateral angles rather obtuse; surface scattered with a few stiff, erect hairs or setae.

Second segment with the produced angles considerably exceeding the angles of the first segment. Anterior margin and both margins of the produced carinae raised. Surface with over 40 stiff erect hairs scattered over the posterior portion of the dorsum and carinae. On succeeding segments the hairs increase materially in numbers, are confined to the posterior half of the segments, and are decidedly more abundant at the posterior margin.

Third segment with the lateral carinae not expanded forward as much as in most of the other species of the genus, more closely resemb-

ling the carinae in the genus *Lophocyclus* but without the characteristic lateral ridge.

Fourth segment with the outer margin of the carinae slightly lengthened but not as much as in *Lophocyclus*.

Ensuing segments similar to those in the other species except for the numerous dorsal setae.

Last segment glabrous except for four setae across the middle, and four others immediately in front of the posterior margin.

Inasmuch as no male has been seen the exact generic location of this species cannot be determined, but it has more characters in common with *Cyclodesmus* than with *Lophocyclus* and so has been placed in the former genus. The numerous dorsal setae at first were thought sufficient grounds for designating this species as the type of a new genus, but later the discovery of a few setae on the dorsum of *C. haitianus* indicated that not all the species of *Cyclodesmus* were glabrous, and the present species is considered as representing an extreme departure from the general mass of species in that genus, but one not lacking a connecting link with them.

LOPHOCYCLUS new genus

Type *Lophocyclus laxatus* new species.

Diagnosis. The strong ridge on each side of segment 3; the truncated lateral carinae of segment 4; and the incrusted surface of the segments are the outstanding points for recognition of this genus.

Description. Body of the same proportions as *Cyclodesmus* and capable of being rolled into a ball. Surface more or less coated with an incrustation of foreign organic matter. All segments with a few erect setae on the dorsal surface.

Head with a deep groove on the vertex. Surface below the antennae beset with erect setae.

First and second segment of the same general shape as in *Cyclodesmus*.

Segment 3 much less produced forward on the sides in front than in *Cyclodesmus*. Raised rim of the anterior margin very narrow and with a broad, deep channel behind it which is in turn followed by a prominent ridge extending from each lateral angle to near the middle of the dorsum where it is broadest and verges with the dorsal surface (Fig. 48).

Carinae of segment 4 with a long lateral margin and distinctly

angled anterior and posterior corners. Posterior margin not notched above the angle.

Segments 5 to 9 inclusive resembling those of *Cyclodesmus* but with the carinae more slender and terminating in sharper angles, apparently to compensate for the lengthening of the lateral margin of the carinae of segment 4, and to allow the body to be rolled into a compact ball; the lateral margins of the carinae behind segment 9 are shorter than in *Cyclodesmus*, and this also probably is a compensating factor towards forming a protective ball.

Gonopods having considerable resemblance to those of *Cyclodesmus*.

Key to the Species of Lophocyclus

- Length over 20 mm.; lateral carinae noticeably spread outward from the line of descent of the sides of the dorsum *passus* new
- Length 16 mm. or less; lateral carinae little or not at all spread away from the line of descent of the sides of the dorsum
- Lateral carinae thickened, especially those just behind the middle of the body; segments with a series of setae very close to the posterior margin *laxatus* new
- Lateral carinae thin on all segments; dorsal setae considerably removed from the posterior margin and none in definite series
- Length near 16 mm.; second segment enclosed on all sides by the raised margin; posterior half of segments not conspicuously convex *munitus* new
- Length about 9 mm.; second segment with posterior margin not raised along the median portion; posterior half of segments strongly convex *pumilus* new

LOPHOCYCLUS PASSUS new species

A single male collected at Roche Croix, 5000 feet elevation, Oct. 13, 1934 by P. J. Darlington. Type in M. C. Z.

Description. This is the largest member of the family thus far described, the length being 22 mm., width 8 mm. Body slightly dirt-encrusted, the deposit being heaviest on the lateral carinae and the anterior portion of each segment in the broad shallow constriction which is nearly covered by the segment in front when the body is unrolled.

Head with a deep furrow on the vertex; front and sides below the antennae with many erect hairs of varying length.

First segment quadrilateral with the side margins strongly converging from front to back; surface with 10 erect setae in a series along the back and side margins; in addition there is a single seta on either side of the middle of the disc at the anterior fourth.

Second segment with the lateral angles reaching opposite those of the first segment. All margins except the median posterior margin narrowly raised. Surface with a broad, shallow transverse depression

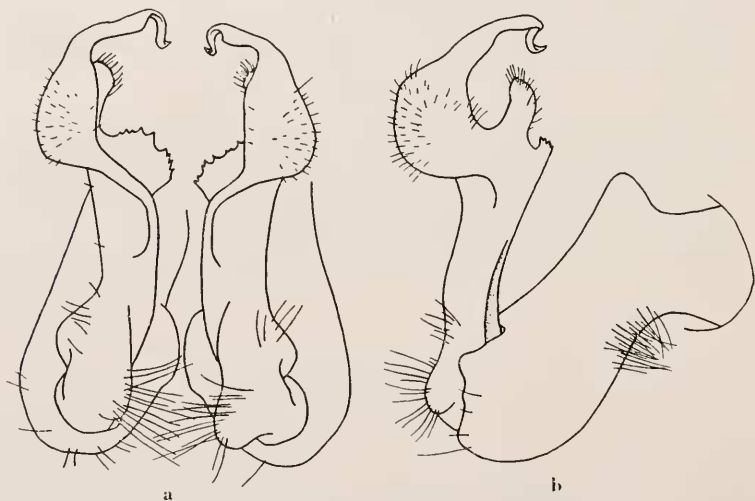


Fig. 46. *Lophocyclus passus*. a, Gonopods; b, Outer lateral view of a gonopod.

immediately behind the anterior median margin; a series of 16 to 18 erect hairs extend across the posterior portion of the segment and onto the lateral carinae nearly to their extremities, the setae rising directly from the smooth surface.

Segment 3 with the anterior lateral margins slightly raised, the surface ridge behind the margin broad and low; dorsal median surface and the surface behind the ridge with a few scattered erect setae; posterior margin of this and succeeding segments to the antepenultimate without setae.

Segment 4 with lateral margin of the carinae of moderate length, slightly rounded and with angles also somewhat rounded.

Dorsum strongly convex, the sides evenly descending to the lateral carinae which change the angle of descent and flare slightly outward.

Lateral carinae thin as in two of the other species, the outer margin lacking setae.

Gonopods as shown in figure 46, *a* and *b*.

LOPHOCYCLUS MUNITUS new species

Two males and one female collected at 5000 feet elevation at Roche Croix, Oct. 13, 1934 by P. J. Darlington. Type and Paratypes in M. C. Z.

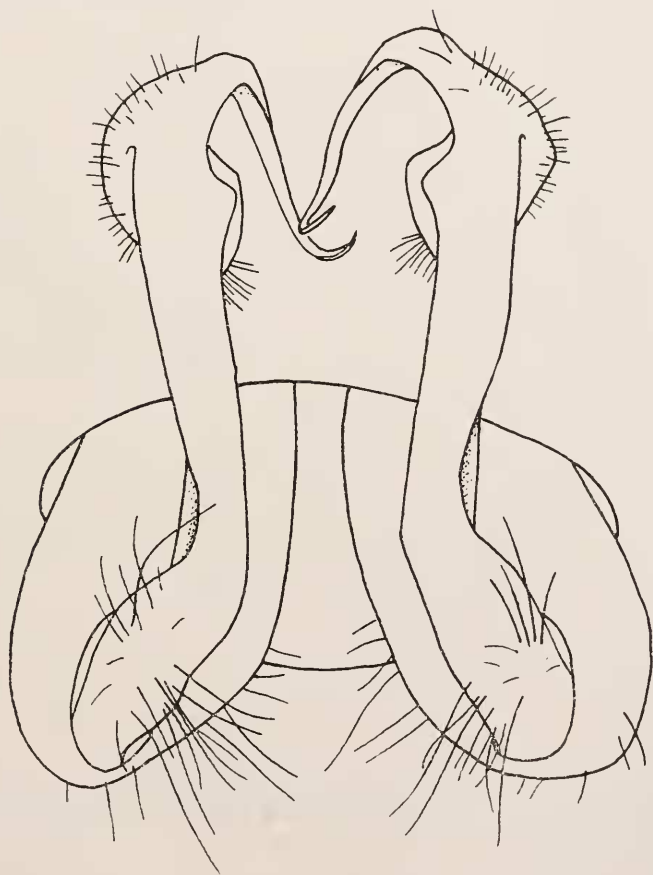


Fig. 47. *Lophocyclus munitus*. Gonopods.

Diagnosis. Closely related to *L. laxatus* which it resembles in size and superficial appearance but distinguished by the lack of a series

of setae along the posterior margin of the segments, by the broader lateral carinae of segments 5 to 8, and by the thinner carinae.

Description. Length 16 mm., width 4 mm. Body moderately incrustated with an organic accumulation heavier than in *L. passus* but less than in the other two species; the accumulation thickest on the lateral carinae, the dorsum quite clean and shining. Dorsum strongly convex, the sides descending almost vertically, the carinae making an almost continuous descent from the dorsum, not flaring away from it as in *L. passus*.

Head and first segment much as in *L. laxatus* but segment 2 with all margins raised, the posterior margin less than the others. Just in front of the posterior margin the surface is raised into a broad, low ridge; anterior surface slightly depressed transversely.

Segment 3 has the anterior rim and the surface ridge behind it thinner and higher than in the other species, the intervening channel correspondingly deeper. Behind the ridge there are a few long, slender setae rising from tiny tubercles indefinitely arranged. Ensuing segments have similar setae sparsely scattered over the surface but not along the posterior margin except on the last segment where several setae are present in one specimen but are rubbed off from the others.

Segment 4 with the outer margin of the carinae slightly more rounded and the angles not quite so acute as in *L. laxatus*.

Segments 5 to 8 with the lateral carinae slightly broader than in *L. laxatus*; all carinae thinner than in that species, and those near the middle of the body without the definite prominence on the ventral surface adjacent to the anterior corner. Dorsal surface along the posterior margin of the mid-body segments very faintly raised into a low ridge. Anterior transverse constriction broad and shallow beneath the preceding segment, scarcely noticeable.

Gonopods shown in figure 47, resembling those of *L. passus* to some extent but with obvious differences.

LOPHOCYCLUS LAXATUS new species

The type, a female, collected north of Trouin, June 26, 1934 by E. M. and H. F. Loomis. Two paratype females were collected between Jacmel and Trouin on May 21, 1925 and April 11, 1926, by O. F. Cook. Type in U. S. N. M. Paratype in M. C. Z.

Diagnosis. Distinguished from *L. munitus* by the presence of a series of setae along the posterior margin of the segments and one or two setae in the outer margin of the lateral carinae beginning with

segment 6. The lateral carinae are slightly more slender and definitely thicker than in the other species.

Description. Maximum length 16 mm., width 4 mm. Color white beneath the rather dark brown incrustation which covers the nearly smooth surface.

Head with groove of the vertex deep; frontal region bearing erect setae to well above the base of the antennae.

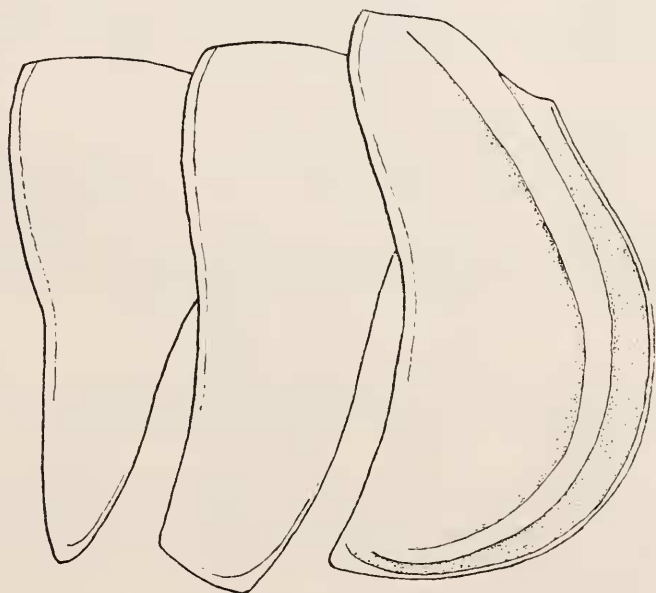


Fig. 48. *Lophocyclus laxatus*. Segments 3, 4 and 5, lateral view.

First segment somewhat emarginate in front, the raised rim thin and high. Setae on the surface of segment 1 and 2 as in *L. munitus* but from segment 3 to the posterior end of the body short setae form a series close to the posterior margin of the segments with a few setae scattered in front of them; segments 6 to 8 with a single seta projecting outward from the extremity of the lateral carinae; from segment 9 backward there are two setae in the elongated outer margin of the carinae.

Segment 2 with the produced angles not reaching those of the first segment by a considerable distance; all margins raised except the median posterior margin.

Segment 3 with the surface ridge on each side strongly developed, broader but not quite as high as that in *L. munitus*. Surface just in advance of the posterior margin of this and succeeding segments slightly elevated into a slight, inconspicuous ridge. (Fig. 48).

Segment 4 with the outer margin of the carinae long and straight, the anterior and posterior corners forming right angles.

Segments 5 to 8 have the lateral carinae quite noticeably slenderer, and the carinae of all segments behind segment 3 or 4 thicker than in the other species; the carinae just behind the middle of the body have a small raised prominence on the ventral side near the anterior corner.

No males of this species have been seen.

A very tightly rolled dead specimen, apparently somewhat longer than *L. munitus* or the foregoing species, and 5 mm. wide, was found by the writer on Morne Pilboreau, July 8, 1927. The specimen was in such poor condition that its true characters could not be determined but it would be surprising indeed if future specimens showed it to be one of the species inhabiting the southern peninsula.

LOPHOCYCLUS PUMILUS new species

One broken male collected between 3000 and 7800 feet elevation on Morne La Hotte, Oct. 16-17, 1934 by P. J. Darlington. Type in M. C. Z.

Diagnosis. The smaller size; general incrustation of organic matter; more distinct transverse constriction on the forward part of the dorsum of each segment; and the greater convexity of the posterior part of the segments, are characters which, in addition to the gonopods, distinguish this species.

Description. Length about 9 mm. width 3 mm. Dorsum and sides heavily coated with a dark brown incrustation of organic matter apparently, only the ridge on either side of the third segment being rubbed clean. Dorsum strongly convex, the carinae not descending continuously with the sides but flaring slightly away from them.

Head with a deep median groove on the vertex.

First segment evenly convex, it and the next segment with setae much as in *L. passus*, but as the setae are not borne on tubercles, and some setae are missing, the number and arrangement are impossible to determine.

Second segment with the posterior portion of the surface strongly convex but not raised into a definite ridge; posterior margin flat but the other margins finely raised.

Third segment with the ridge on either side narrow but high, particularly near its upper limits. Behind these ridges is a row of at least 10 erect setae and other setae may have been included but

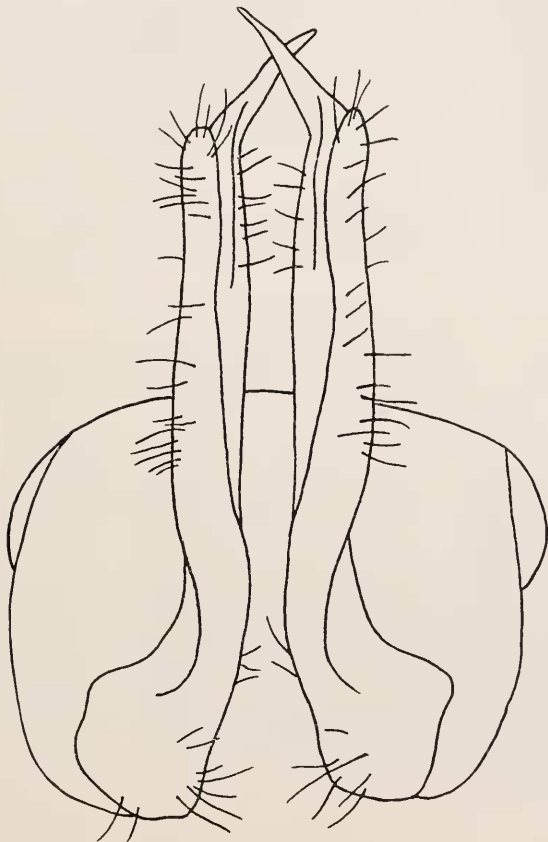


Fig. 49. *Lophocyclus pumilus*. Gonopods.

if so they now are missing. Posterior surface along the margin raised into a slight ridge, especially on the sides.

Fourth segment with the outer margin of the carinae long and nearly straight, the corners angular-rounded, the raised rim of the margin heavy.

Succeeding segments with the surface incrustation seemingly thicker on the posterior half of the segments than on the anterior portion but removal of the incrustation shows the anterior fourth to be crossed by a transverse depression which is more pronounced than similar depressions in the other species; behind this depression the surface is strongly convex and on the posterior segments this surface, with its accumulation of matter, appears almost as a ridge. On the back half of these segments a few short, scattered hairs project through the incrustation but none are in a series close to the margin as in *L. laxatus*.

Gonopods as shown in figure 49, simpler than in the other species of which males are known.

Family STRONGYLOSOMIDAE

ORTHOMORPHA Bollman

ORTHOMORPHA COARCTATA (Saussure)

Polydesmus coarctata Saussure, Mem. Myr. Mex., p. 297, 1860.

Strongylosoma poeyi Bollman, Ent. Amer., p. 82, 1887.

Strongylosoma coarctatum Pocock, Jour. Linn. Soc., **24**, p. 512, 1894.

Orthomorpha coarctata (Sauss.) Bollman, U. S. Nat. Mus., Bul. 46, p. 196, 1893.

This is a cosmopolitan species of wide distribution in the Tropics. It is common throughout Haiti, having been found in the following localities. Port au Prince, Momance, Cape Haitien, Grande Riviere, Ennery, Manneville, Jacmel, Petionville, Diquini, Bayeux, Artibonite River between St. Marc and Gonaives; Trouin; "Etang La Chaux" (P. J. Darlington).

Family CHELODESMIDAE

Key to the Hispaniolan genera of Chelodesmidae

Repugnatorial pores opening from a callus set off from the rest of the margin.

Body composed of head and 19 segments. . . . *Ellipodesmus* Chamberlin

Body composed of head and 20 segments.

- Carinae of segments 2 to 4 without a marginal tooth.....
Achromoporus new
- Carinae of segments 2 to 4, at least, with a tooth at the anterior corner.
- Gonopods with the end of each posterior division developed into a long, slender, more or less coiled style; each anterior division also somewhat coiled and usually crossing the opposite division.....*Amphelictogon* Chamberlin
- Gonopods with posterior divisions not developed into coiled styles at tip nor are the anterior divisions coiled or crossing each other.
- Posterior margin of segments without projecting teeth.....
Chondrotropis new
- Posterior margin of segments with distinct teeth.....
- Poriferous segments differing in color pattern from the segments without pores.....*Beataodesmus* Loomis
- Poriferous and non-poriferous segments similar in color.....
Quisquicia new
- Repugnatorial pores opening from a simple thickening of the margin*
- Lateral carinae reduced in size, scarcely projecting from the sides of the body.....*Pterygiodesmus* new.
- Lateral carinae of normal size, strongly projecting from the sides of the body.....
- Pores opening from the dorsal surface of the lateral carinae.....
Aplopododesmus new
- Pores opening outward from the margin of the lateral carinae.....
- Color pattern of poriferous and non-poriferous segments similar; segments with three transverse rows of setae on the dorsum; males without modifications of the legs and sterna in front of the gonopods.....*Pogonodesmus* new
- Color pattern of poriferous segments different from that of the non-poriferous segments; dorsum of segments without transverse rows of setae; pregenital male legs or sterna with secondary sexual modifications.....*Cyrtaphe* new

ELLIPODESMUS Chamberlin

ELLIPODESMUS SIMPLEX Chamberlin

Ellipodesmus simplex Chamb., Bull. Mus. Comp. Zool., 62, No. 5, p. 243, 1918.

Jacmel (type locality).

No specimens of this species have been examined.

ACHROMOPORUS, new genus

Type. *Achromoporus coloratus* new species.

Body with 20 segments; females usually distinctly stouter and more convex than the males, the latter usually with the sides slightly converging caudad behind the third segment. Surface of all segments smooth and shining, the posterior subsegments not transversely furrowed, none of the margins toothed. Color, when present, usually confined to the nonporiferous segments.

Head with a long, deep groove on the vertex. Antennae with joints 2 to 6 inclusive of nearly uniform length. Antennae of the males inconspicuously stouter than those of the females.

First segment semielliptic, the posterior margin broadly and quite deeply emarginate at middle.

Pores borne on the customary segments, the poriferous swelling large, conspicuous, and on the anterior segments more vertically depressed and with the pore opening from nearer the dorsal surface than on the posterior segments.

Last segment produced into a downward curved, truncate mucro.

Anal valves with greatly raised and thickened margins, the disc of each valve strongly convex. A seta is borne on each margin near the upper fourth and another is located on each disc opposite the lower third of the margin.

Preanal scale triangular, the apex sometimes produced backward.

Legs with the third joint longer than any of the others and in the males with a low swelling on the ventral surface of legs 3 to 7, near the basal fourth; several of the legs following the gonopods with decreasing swellings in the same position.

Coxae of the second legs of both sexes with the inner corner more or less elevated into a conic tubercle which is usually larger in the males.

Sternum of the third legs of both sexes with a conic tubercle on each side of the median depression in three of the species but in the type species these tubercles are reduced to very slight swellings.

Gonopods with the anterior division erect, terminating in a short, incurving hook; posterior division slightly exceeding the anterior division, bifurcate, the two arms thin and only slightly curving inward or backward, subequal in length, the posterior sometimes considerably broader and more blade-like than the anterior; base of the joint densely hairy at its inner corner.

The four species of this genus are separated in the following key.

Key to the Species of Achromoporus

- Vertex of head, outer antennal joints, and the ventral surfaces, except the sterna and the under side of the keels, brown in addition to the dorsal markings; sternum of the third legs of both sexes lacking two conic tubercles. *coloratus* new
- Head and the antennae light, ventral surfaces partly or entirely light colored, the dorsum usually with some brown markings; sternum of the third legs of both sexes with a distinct conic tubercle on each side of the impressed median line.
- Males stout and strongly convex and with the sides of the body parallel, except at the extremities; preanal scale with the apex definitely prolonged into a slender tip; specimens entirely white. *robustus* new
- Males more slender and somewhat flattened, the sides of the body slightly converging caudad beginning with the fourth segment; preanal scale not definitely prolonged at the apex; most specimens with some brown on the dorsum.
- Preanal scale triangular, the sides straight and continuous from the lateral angles to the apex; anterior division of the gonopods with the inner side descending in a nearly vertical line from the apical hook; posterior division of the gonopods with the posterior blade very broad and with a broadly rounded apex. *enneryensis* new
- Preanal scale with a slight emargination on each side near the apex; anterior division of the gonopods with the inner side produced abruptly mesad below the apical hook; posterior division of the gonopods with both blades slender and acute at tip. *furcipes* new

ACHROMOPORUS COLORATUS new species

Many males (1 the type) and females collected at Thor, near Port-au-Prince, May 19, 1927, L. Other males and females from Diquini, June 26, 1927 and Carrefour, July 3, 1927, C. & L. One male between Petionville and Kenscoff, June 23, 1934, L. Type in U. S. N. M. Paratype in M. C. Z.

Length from 20 to 26 mm. Males more slender, much flatter and with the lateral carinae projecting further from the sides of the body than in the females; males definitely narrowing caudad behind the third segment, the females with sides parallel except at the extremities.

Living color mostly white, a dark internal median line showing through the segments from the second to the penultimate inclusive.

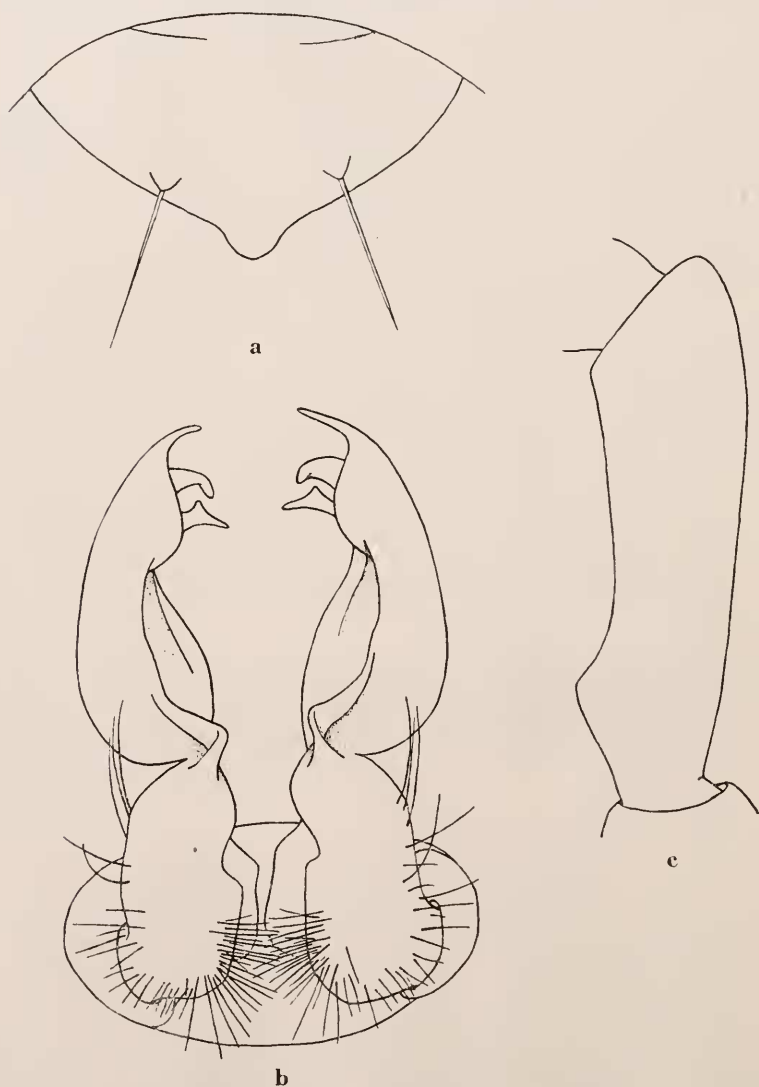


Fig. 50. *Achromoporus coloratus*. a, Prenal scale; b, Gonopods; c, Third joint of sixth male leg.

Head dark brown, to a little below the antennae, the clypeal and labral region white. Basal joint of the antennae light colored, the

other joints brown. First segment with the margins and a longitudinal median line solid white, a large area on each side of the middle maculate with white on a semitransparent ground; in fully marked specimens there is a dark brown spot on each side close to the front margin and nearer the lateral angle than the middle of the dorsum. Segments 2, 3, 4, 6, 8, 11, and 14 white with a large dark brown spot on each side, half of which is on the keel and dorsum of the posterior subsegment and the other half on the anterior subsegment. Last segment with a large dark brown spot on each side in front. Poriferous segments white, with a semitransparent spot, maculate with white, on each side in a position similar to the brown spot of the other segments, although in some well-marked females a small brown spot is present in each of these areas. Ventral surfaces mostly dark brown, the sterna, under side of the keels, and the legs light colored.

Preanal scale rounded-triangular, with the apex somewhat produced, the margin on each side of it being slightly rounded, (Fig. 50, *a*).

Second legs of both sexes with the inner corner of each coxal joint produced into a short conic tubercle.

Sternum between the third legs of both sexes depressed at middle but with only a slight swelling on each side of it.

Gonopods as shown in figure 50, *b*, the anterior division on each side is explanate at the apex, almost bifurcate; the posterior division with the tip of the posterior arm distinctly attenuated, the mesial margin just below it expanded inward.

Anterior legs of the males with the prominence on the ventral side of the third joint conspicuous (fig. 50, *c*); present on several of the legs behind the gonopods but decreasing in size.

ACHROMOPORUS ENNERYENSIS new species

Two males (1 the type) collected at Ennery, July 6, 1927. C. & L. Four males collected on Morne Pilboreau, above Ennery, July 8, 1927, C. & L. Type in U. S. N. M. Paratype in M. C. Z.

Length 18 to 24 mm. Males more convex and less attenuated behind than in *A. coloratus*.

The living color of this species is brown and white arranged as in *A. coloratus* but the brown is lighter and the spots are smaller. In all specimens the head, antennae, first segment, legs, and sterna are light colored; the sides of the body below the keels showing light brown in the most fully colored specimens; one of the specimens has no brown color above or below.

Preanal scale with the tip very indistinctly prolonged, the margin on each side of it very faintly emarginate.

Second legs with the inner corner of each coxal joint only slightly produced, forming a low rounded tubercle.

Sternum between the third legs with a conspicuous conic tubercle on each side of the impressed median furrow.

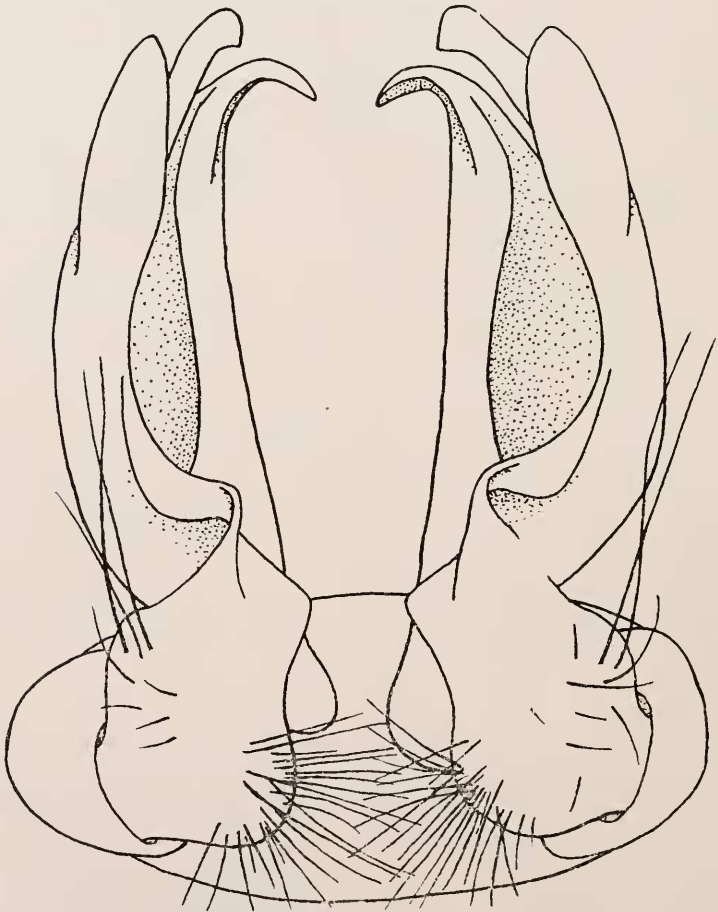


Fig. 51. *Achromoporus enneryensis*. Gonopods.

Gonopods as shown in figure 51; the anterior division on each side with the apex slender, acute, and bent inward, the margin below it descending straight to the base; posterior division on each side with the posterior arm very broadly blade-like, the apex blunt.

Anterior male legs with the prominence on the ventral side of the third joint almost obsolete, reduced to a very inconspicuous swelling.

ACHROMOPORUS FURCIPES new species

A male (type) and a female collected near Plaisance, July 8, 1927, C. & L. Numerous other males and females collected on Morne Pilboreau, between Plaisance and Ennery, May 24 and July 8, 1927. C. & L. Type in U. S. N. M. Paratype in M. C. Z.

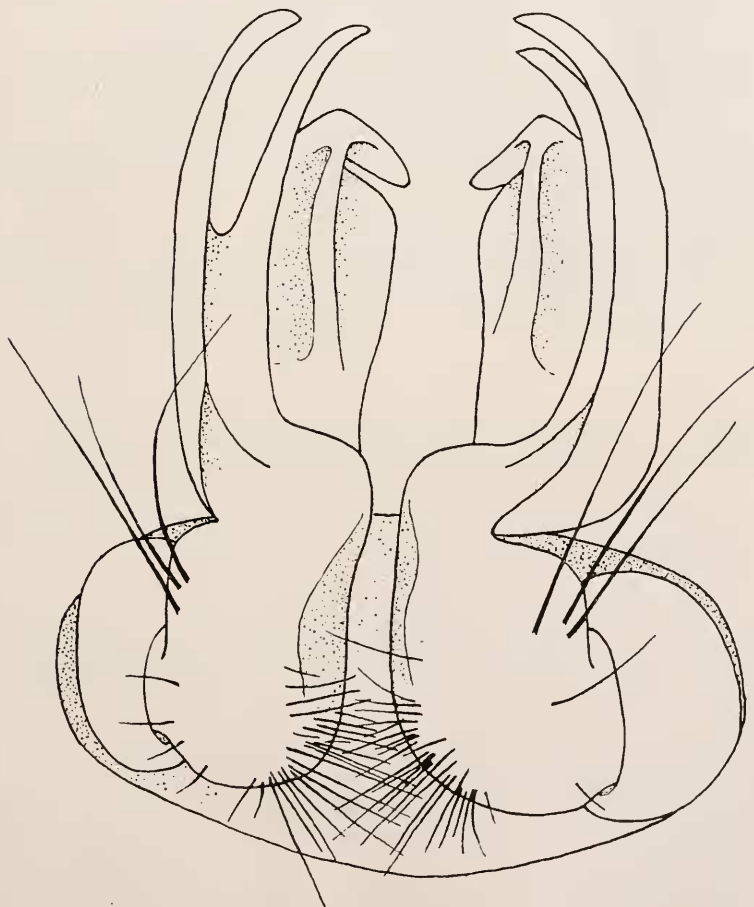


Fig. 52. *Achromoporus furcipes*. Gonopods.

Length 19 to 27 mm. Males of the same form as *A. enneryensis*, being more convex and less attenuated behind than in *A. coloratus*.

Most of the specimens are colorless but one or two are marked with brown as in *A. ennerlyensis*.

Preanal scale with the sides straight from the lateral angles to the apex, without any suggestion of an emargination near the apex.

Second legs of both sexes with the inner corner of each coxal joint produced into a short, conic tubercle, more evident in the males.

Sternum between the third legs of both sexes with a conic tubercle on each side of the median furrow, the tubercles higher and more noticeable in the males; in some females scarcely evident.

Gonopods as shown in figure 52; the anterior division of each side terminating in a stout lobe directed inward and forward, the mesial margin below the lobe produced as far inward as the apex of the lobe and then descending; each posterior division with the two furcations slender and subequal in size and length, their tips acute, the cleft between the branches deep and rounded.

Anterior legs of the males with the prominence on the ventral side of the third joint scarcely evident, represented by a slight swelling.

ACHROMOPORUS ROBUSTUS new species

Two males (1 the type) collected near Cancoque, May 13, 1927, L. One male collected near Plaisance, July 8, 1927, C. & L. Type in U. S. N. M. Paratype in M. C. Z.

Length 20 to 22 mm. Body of the males much more convex than in any of the other species here described, and not attenuated behind the third segment as in those species but with the sides of the body parallel.

All specimens a waxy white throughout.

Preanal scale with the apex very definitely produced into a slender tip; from its base to the lateral angles the sides are nearly straight. (Fig. 53, *a*).

Coxae of the second legs and sternum between the third legs as in *A. furcipes*, the tubercles of the sternum are scarcely as large as in that species, however.

Gonopods as shown in figure 53, *b*; the two branches of the posterior

division shorter and stouter than in *A. furcipes* and the cleft between them more acute.

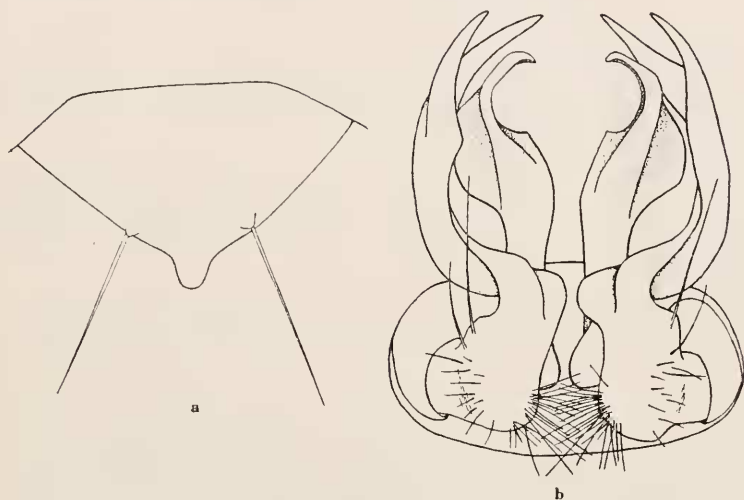


Fig. 53. *Achromoporus robustus*. a, Preanal scale; b, Gonopods.

Anterior legs with the prominence on the ventral side of the third joint less conspicuous than in *A. coloratus* but more noticeable than in the other species.

AMPHELICTOGON Chamberlin

AMPHELICTOGON MANNI Chamberlin

Amphelictogon manni Chamberlin, Bull. Mus. Comp. Zoöl., **62**, p. 231, 1918.

Diquini, near Port-au-Prince, is the type locality. The type is a female which has not been seen.

Considerable collecting was done in and near the type locality in the hope of rediscovering this species, but without success. The color pattern seems to be quite distinctive. It is assumed that there is a tooth on the posterior margin of the keels, as in the other members of the genus. No other species of this predominantly Cuban genus has been found in Hispaniola, and the inclusion of *manni* may be questioned, but the point cannot be settled without examining a male specimen.

CHONDROTROPIS new genus

Type *Chondrotropis niger* new species.

Body moderately long; both sexes with the sides converging caudad from the second or third segment, more strongly so in the males than in the females; dorsum of the males more flattened, the lateral carinae more horizontal and projecting farther.

Head with a deep groove extending across the vertex to between the antennae. Antennae with joint 2 slightly longer than any of the others, joints 3 to 6 inclusive nearly equal, joint 3 sometimes a little longer than the others except joint 2.

First segment with the anterior margin nearly straight to broadly rounded; the posterior margin extensively emarginate at middle.

Ensuing segments to near the posterior end of the body with 2 to 8 small, broadly conic tubercles scattered on the dorsal surface of the keels, the apex of each tubercle with a tiny punctation. In some specimens the tubercles are obsolete on some of the segments, particularly those toward the posterior end of the body. Surface, except for the tubercles, smooth and shining but with moderate magnification visibly reticulated and longitudinally scratched.

Beginning on segment 2 and not extending beyond segment 9 there is a small, acute tooth projecting from the lateral margin of each keel just behind the anterior corner.

Pores of the customary segments.

Anal valves with high, thick margins; the disc of each valve strongly convex and with the seta located between the middle and the basal third, rather close to the raised margin.

Preanal scale rounded-triangular, the apex slightly produced.

Gonopods with each anterior division either deeply bifurcate or simple, in the latter condition the outer branch appearing to have been reduced to a broad, angular prominence on the side of what corresponds to the inner branch; in the other species each posterior division with the base stout and from its apex a long, slender prong curves outward, upward and then inward, the more or less attenuated extremity slightly surpassing the anterior division.

The gonopods projecting through an oval opening surrounded by a raised rim much higher on the sides than behind.

Second male legs with the inner corner of each coxa produced into a conic tubercle, coxae of the second legs of the females simple.

Sternum between the third male legs narrower than that of the

female and with the sternal prominences much closer together, sometimes adnate to near their apex.

The three species are separated in the following key.

Key to the Species of *Chondrotropis*

Color of the poriferous keels white, the nonporiferous keels brown *venustus* new

No striking color differences between the poriferous and nonporiferous segments

General color black or brownish-black, sometimes relieved by dorsal colored areas ranging from reddish-brown to reddish-yellow *niger* new

Animals distinctly bicolored, red or pink, and white *pictus* new

CHONDROTROPIS NIGER new species

Numerous males and females found crawling over rocks at the base of a cliff near the road below Ennery, July 7, 1927, C. & L. Type in U. S. N. M. Paratype in M. C. Z. A male, badly broken, collected at Dondon, Jan. 1926, by E. C. Leonard.

Length usually 26 mm.; the males as long as the females but more slender, with the sides definitely narrowing from the third segment to the caudal end of the body; females with the sides slightly narrowed; lateral carinae of the males projecting farther, more depressed and horizontal than those of the females.

Living color of the males shining black, sometimes with a brownish cast; head black; dorsum of each segment from the first to the penultimate inclusive with an inconspicuous brown spot in front of the posterior margin at middle; posterior portion of the poriferous carinae reddish-brown; ventral surfaces, legs and antennae almost black. Females distinctly browner than the males; first segment with the lateral corners and a median anterior and posterior spot light reddish-yellow, the spots sometimes connected; ensuing segments each with a round-quadrate spot of reddish-yellow on the middle of the dorsum limited behind by the posterior margin; posterior corner of the lateral carinae yellow or reddish-yellow; much of last segment rather light brown; anal valves and preanal scale dark; antennae and legs with the proximal joints light brown, the outer ones darker; ventral surfaces quite light brown.

Head with the groove of the vertex long and deep, the surface on each side of it notably swollen; from the lower, outer side of each

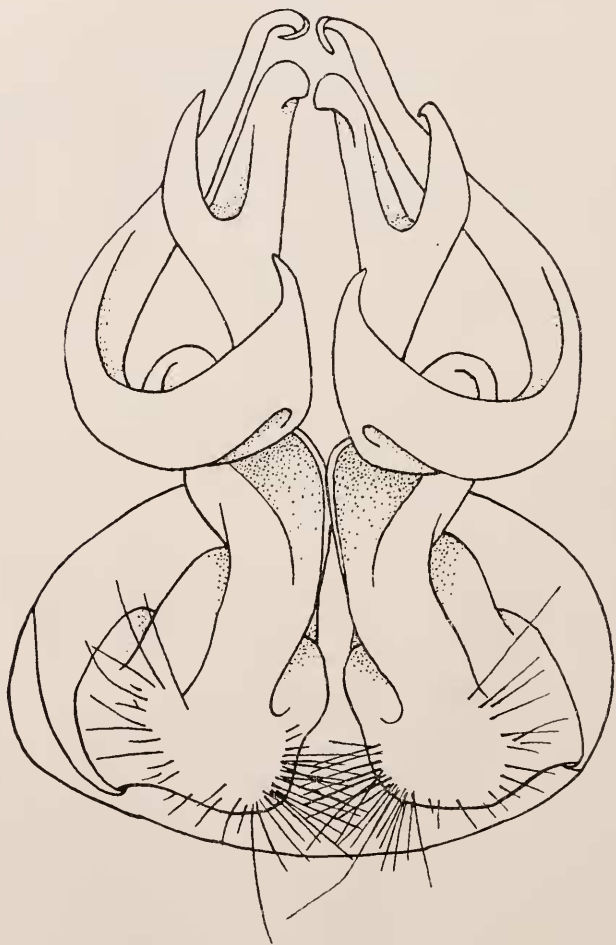


Fig. 54. *Chondrotropis niger*. Gonopods.

antennal socket a short, deep groove usually extends forward half way to the corner of the clypeus. Antennae with the third joint slightly longer than any of the three that follow.

First segment with the margin behind the head nearly straight, scarcely rounded; posterior margin broadly and quite deeply emarginate at the middle; lateral corners somewhat less than right angles.

From segment 2 sometimes as far back as segment 9 an acute tooth projects from the margin of each keel just behind the anterior corner.

Beginning with segment 2 and usually extending onto the third segment at the posterior end of the body there are 5 to 8 low, rounded tubercles, varying from small to very tiny, scattered over the dorsal surface of each keel and the adjacent side of the dorsum, the apex of each tubercle shining and with a tiny punctation in the center; surface of the segment elsewhere shining but moderate magnification shows definite reticulations and a few longitudinal scratches.

Anal valve with thick and very high margins, the disc of each valve with numerous straight, impressed lines extending obliquely inward and downward toward the preanal scale; seta located just above the basal third and close to the margin.

Gonopods as shown in figure 54; the two branches of the anterior division on each side terminate in slender tips, as does the apex of each posterior division, only the latter is longer and more attenuated.

Second legs of the males with the inner corner of each coxa produced into a rather high, broad, conic tubercle which is replaced by a rounded corner in the females.

Sternum between the third male legs narrower than in the females and with the two low, tumid prominences much closer together, almost touching.

CHONDROTROPIS PICTUS new species

Plate 2. Fig. 2

One male (type) collected on Morne Pilboreau, above Ennery July 7, 1927, and another male and a female collected in the same locality the next day.

C. & L. A female also was collected here May 24, 1927. L. Type in U. S. N. M. Paratype in M. C. Z.

Diagnosis. Very closely related to *C. niger* but differing principally in coloration. The males are less depressed and the processes of the sternum of the fourth male segment are adnate nearly to the tips and form a single, large median swelling instead of two submedian cones.

Description. Length 26 to 32 mm.; males more attenuated behind than the females and with the dorsum flatter, the lateral keels more

projecting and somewhat depressed, but not as much as in the males of *C. niger*.

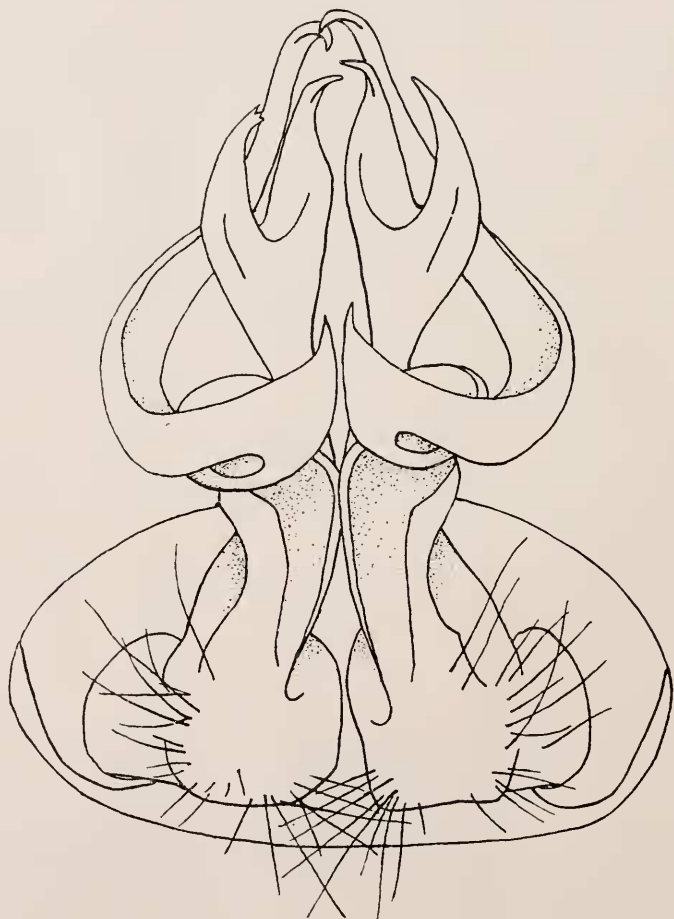


Fig. 55. *Chondrotropis pictus*. Gonopods.

Living color light red or pink, and white. Head dark brown, except the clypeus and labrum which are light yellow; antennae with the basal joints pale pink, the outer joints light red. First segment pink, except for 2 rather large transverse and sometimes confluent brown areas on

the disc. Ensuing segments with the keels reddish-pink, except the anterior margin and corner which are light brown; on the poriferous segments the pink area is larger and the brown area is smaller than on the nonporiferous segments; base of the keels and the sides of the body, where they are joined by the keels, chestnut brown as are the sides of the anterior subsegments between the keels and the ventral surfaces, half way to the legs; the remainder of the ventral surfaces nearly white; dorsum of the anterior and posterior subsegments nearly white, the former with an elongate-oval spot of brown on the median line, the latter with the posterior two-thirds tinged with pink. Last segment light brown, the tip with a pink cast. Anal valves light brown, the preanal scale still lighter. Legs very light red, the basal joints particularly so.

Head with the groove of the vertex as long as in *C. niger* but not as deep, the surface on each side of it only moderately inflated; surface below the antennal sockets smooth and broadly concave, but with no indication of a distinct groove as in *C. niger*.

First segment with the anterior margin broadly rounded, the emargination at the middle of the posterior margin broad but more shallow than in *C. niger*.

Segment 2 to segment 4, 5 or 6 with an acute tooth projecting from the lateral margin of each keel just behind the anterior corner.

Keels of the segments with the tubercles on the dorsal surface reduced in size and number, seldom more than 4, sometimes they are nearly or completely obsolete on some segments.

Anal valves with the margin moderately high; disc of each valve with scarcely any oblique furrows. Preanal scale as in *C. niger*.

Gonopods closely resembling those of *C. niger*, as reference to figure 55 shows, however, the inner branch of the anterior division of each gonopod has a much less acute apex, which also is bent caudad as well as mesad; the lower inner corner of the basal portion of each gonopod appears to be more densely hairy than in *C. niger*.

Second legs of the male with the inner corner of each coxa produced into a short, conic swelling which is represented by an inconspicuous angle in the female.

Sternum between the third male legs narrow, with a low, rounded swelling in the middle, formed by the coalescence of the 2 conic tubercles which usually are present; the median furrow is represented by a shallow, knife-like cut across the summit of the swelling. Females with the sternum wider and with a rather broadly conic tubercle on each side, the tubercles widely separated by the median furrow.

CHONDROTROPIS VENUSTUS new species

Plate 2, Fig. 3

One male (type) and 3 females collected on Morne Brigand, near Bayeux, July 16, 1927. L. Type in U. S. N. M. Paratype in M. C. Z.

Diagnosis. This is perhaps the handsomest of the Hispaniolan millipeds; the white keels of the poriferous segments contrast strongly with the dark chestnut brown of the dorsum, and the alternation with the dark keels of the nonporiferous segments is very striking and immediately distinguishes this species from the other two in the genus. The gonopods also are quite different, as comparison of the drawings shows.

Description. Length 32 to 36 mm.; the male a little flatter and more attenuated behind than the females, the lateral carinae only a little more projecting and depressed.

Living colors white and chestnut brown. Head dark brown, except on the sides and the clypeus which are light brown. First segment narrowly yellowish-brown along the front margin at the middle, behind which is a large dark brown area of the shape of 2 equilateral triangles, with their bases toward the front, their inner corners joined, the outer corner of each reaching the lateral margin and the apex reaching the posterior margin some distance from the middle; thus the design of the remainder of the segment is 3 subtriangular areas of white, one including each lateral angle and the other between the dark triangles. Segment 2 dark brown, with a transverse white area extending inward from each posterior angle. Ensuing nonporiferous segments dark brown, with a lighter median area near the posterior margin and another less conspicuous one in front. Each of the poriferous segments with the keels and some of the adjoining surface of the dorsum pure white, the middle of the dorsum broadly dark brown, except a light area in front and behind on the median line. Last segment dark at base, the tip lighter. Anal valves and preanal scale dark brown. Anterior subsegments light, broadly brownish-yellow at the middle with a narrower darker median line showing through the integument. Sides of the body below the keels dark half way to the legs, the remainder of the ventral surface dirty white. Antennae and legs nearly cherry red.

Head much as in *C. pictus*. Antennae with joint 2 slightly longer than any of the others; joints 3 to 6 inclusive subequal in length.

First segment broadly rounded in front, the posterior margin broadly and moderately deeply emarginate at the middle.

Segments 2 to 4 inclusive with a tiny tooth on the lateral margin of each keel just behind the anterior corner.

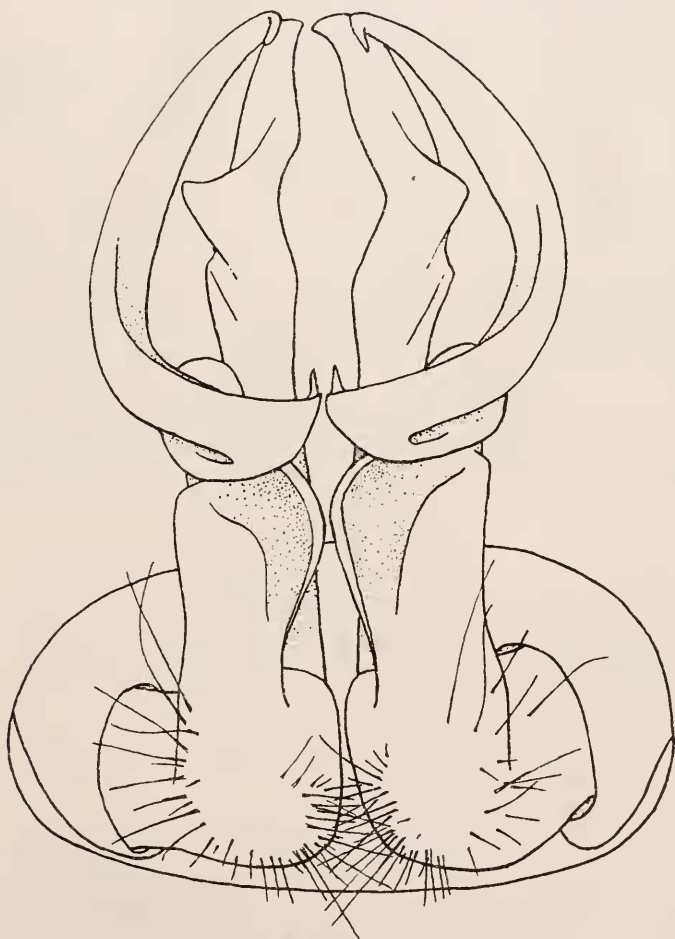


Fig. 56. *Chondrotropis venustus*. Gonopods.

Keels of the segments with 2 or 3 broad, low, inconspicuous tubercles on the dorsal surface, the tubercles frequently entirely lacking from some segments; surface otherwise as in the other 2 species.

Anal valves with the margins thick and moderately high; the disc of each valve strongly furrowed obliquely downward and inward toward the scale, seta nearly opposite the middle of the raised margin. The preanal scale as in the other 2 species.

Gonopods as shown in figure 56; each anterior division long and quite simple, a broadly triangular projection from the middle of the outer side representing the branch which is present in the other 2 species; each posterior division with the distal half shorter and more evenly curved from the base to the apex and with the apex not as greatly attenuated as in the other species.

Second male legs with the inner corner of each coxa produced into a short and broadly conic tubercle; females with the same corner broadly rounded instead of produced.

Sternum between the third legs of the male narrow, with 2 rather high, closely placed conic tubercles separated by the median furrow. Sternum of the female broader and with lower, broader conic tubercles more widely separated.

Sterna of the fifth segment of the male broad and with 2 large, rounded elevations between each pair of legs, separated by the longitudinal median line. Females with the sterna broader and without elevations.

BEATADESMUS Loomis

BEATADESMUS UTOWANI Loomis

Beatadesmus utowani Loomis, Smiths. Misc. Coll., 89, no. 14, pp. 31 & 32, 1934.

Collected on Beata Island, off the south coast of Hispaniola.

QUISQUICIA new genus

Type. *Quisquicia scitula* new species.

Diagnosis. Many structural features of *Beatadesmus* associate it with *Quisquicia* but the similar color pattern of the segments with and without pores distinguish *Quisquicia*, although examination of males of *Beatadesmus utowani* may show all species of *Quisquicia* to be congeneric with it. The gonopods of *Aplopododesmus* and *Pogonodesmus* are suggestive of this genus but the pores open dorsally in the former genus and there is no pore callus in the latter genus.

Description. Body of medium size, from 20 to 30 mm. in length; males slightly more slender than the females.

Color pattern of all segments the same.

Surface of segments smooth in the type species but in the others it is variously granular, the males usually less granular than the females.

First segment with three transverse rows of setae. Ensuing segments with three transverse rows of setae, 6 to 8 setae in the front and middle row and 10 in the back row. Dorsum without a transverse depression, usually convex, the lateral carinae continuous with it. From segment 2 sometimes as far back as segment 15 or beyond, a tooth is present near the anterior corner of each carina. Posterior corners of the poreless carinae acute. Pores opening laterally from a large thickened callus occupying the back half of the lateral margin of the carina of the usual segments. Posterior margin of most segments usually with a definite tooth near the base of the carinae, teeth being strongly evident in all species except *Q. rubens*.

Sterna concave but not crossed in either direction by a distinct furrow.

Gonopods composed of two slender, subequal, divisions of notable simplicity as shown in the drawings of the species.

Pregenital legs and sterna with no special modifications.

The generic name is derived from one of the old native names for Hispaniola, "Quisquica."

Key to the Species of Quisquicia

- Body of small size, not exceeding 20 mm. in length *scitula* new
- Body of large size, 25 to 35 mm. in length
- Dorsum apparently smooth; segments lacking distinct teeth on the posterior margin *sallei* (Saussure) ¹
- Dorsum distinctly granulated or tubercular; some segments with one or two teeth on the posterior margin near the keel
- Head everywhere setose except at the highest part of the vertex; outer margin of non-poriferous carinae with several teeth *engonata* new
- Head glabrous except on the front; outer margin of non-poriferous carinae never with more than one tooth
- Color black and cherry red; a conspicuous tooth at the anterior corner of segments 2, 3 and 4; pore callus much swollen *insignis* (Chamberlin)
- Color apparently nearly solid throughout, reddish, with no trace of black; an inconspicuous tooth at the anterior corner of segments 2, 3 and 4; pore callus much less swollen . . . *rubens* new

¹ The characters given in this key for *Q. sallei* were derived from Saussure's drawing of the species.

QUISQUICIA SCITULA new species

Plate 1, Fig. 4

Many specimens of both sexes crawling over rocks and tree trunks collected north of Trouin, June 26, 1934 by E. M. Loomis. Type in M. C. Z. Paratype in U. S. N. M.

Description. Length 20 mm., width 2.5 mm.; males more slender than the females; segments strongly convex transversely, the lateral carinae well below the level of the dorsum.

Living color deep brown, almost black, and creamy white. Head dark above, light below. First segment white around the margin, the inner dark area transverse, medianly constricted in the form of a pair of spectacles. Ensuing segments with the anterior subsegments dark brown throughout; posterior subsegments with the front half, including the carinae, entirely dark brown, the back half with the hind corners of the carinae white, adjacent dorsum dark with the median portion white; this white area is in the shape of a transverse rectangle. Last segment dark at base, white at apex. Ventral surfaces dark in fully colored specimens.

Head smooth, the vertex with a pronounced furrow; antennae rather short, being incapable of reaching beyond segment 2; joints 2 to 6 inclusive of equal length and thickness.

First segment of the usual semi-circular shape, with an anterior row of 10 setae erected from the smooth surface. Several pits in the inner surface apparently indicate where other setae have been.

Segment 2 with a tiny tooth at the front angle of each keel; larger teeth are present on the ensuing keels to about segment 15 in the males and segment 8 in the females. (Fig. 57, *a*.) Posterior corners of the non-poriferous segments acute. Pores opening laterally from a large, thickened callus occupying the posterior half of the lateral margin of the keel. Posterior margin of segment 4 to segment 16 or 17 with a large tooth adjacent to the keel in the male; in the females these teeth are much reduced in size and are scarcely evident beyond the middle of the body. Surface of the dorsum smooth and shining, sometimes with a few tiny tubercles on the surface of the keels which possibly may indicate that setae were present in unrubbed specimens as about 10 setae are present along the posterior margin of segments 18 and 19 where they are borne on similar minute tubercles. Lateral carinae not projecting far from the sides of the body on the anterior segments and on the posterior segments they are even more greatly reduced, only the poriferous calluses or the posterior angles of the non-poriferous segments projecting.

Anal valves distinctly rugulose vertically; with smooth raised margins.

Prenal scale triangular, the two setae on tiny submarginal tubercles.

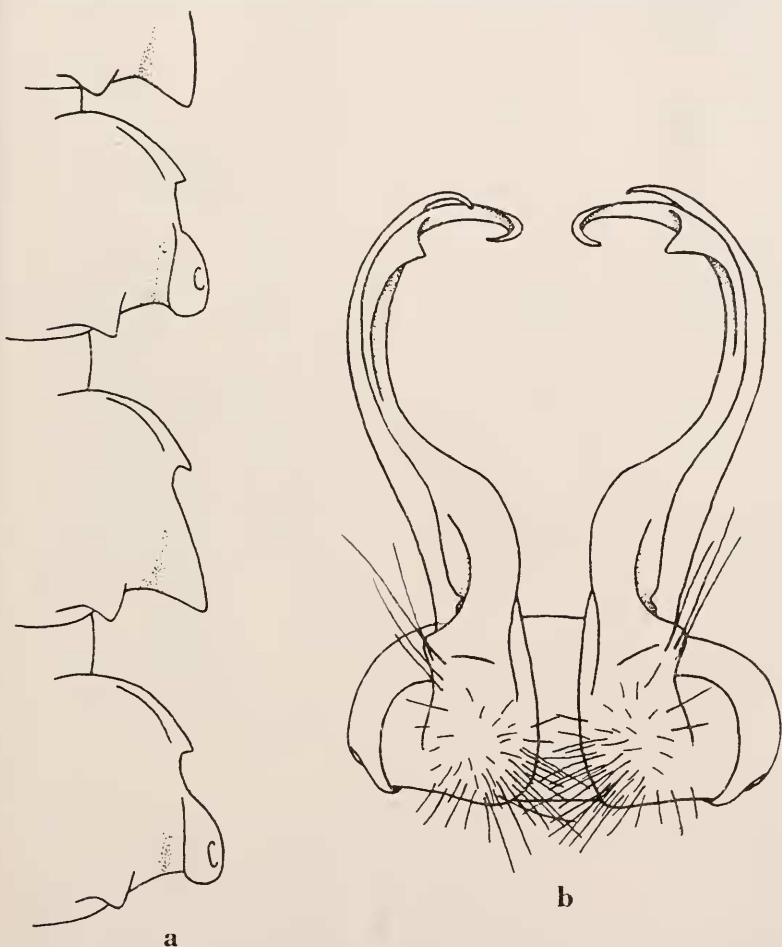


Fig. 57. *Quisquicia scitula*. a, Lateral carinae of segments 4 to 7; b, Gonopods.

Sterna nearly glabrous, concave at center but without an impressed furrow in either direction.

Gonopods as shown in figure 57, b.

Pregenital legs of the male unmodified.

QUISQUICIA ENGONATA new species

A mature male and female and a young male collected at Roche Croix, Morne La Hotte, at 5000 feet elevation, Oct. 13, 1934 by P. J. Darlington. Type and paratypes in M. C. Z.

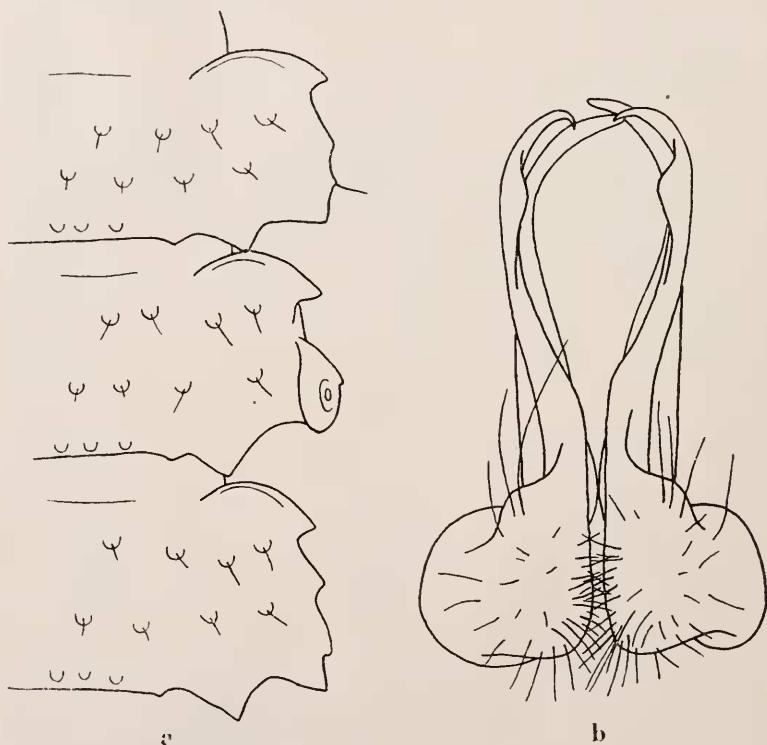


Fig. 58. *Quisquicia engonata*. a, Right half of segments 4, 5 and 6; b, Gonopods.

Diagnosis. The form of the gonopods indicates close relationship with *Q. scitula* but the body is larger; the dorsum bears setiferous tubercles; the lateral carinae are level with the dorsum and project farther from it.

Description. Length of the type 27 mm. No striking differences between the sexes in the shape or sculpturing of the body. Body with the lateral carinae horizontal, high on the sides, continuous with the

flat dorsum from which they project strongly on all segments. The specimens are creamy white but it is doubtful if this was the color in life.

Head everywhere beset with upright setae except on the highest part of the vertex; antennae long and slender.

First segment semi-circular; with an anterior row of 10 setae rising directly from the surface, a median row of 8 setae rising from faintly indicated elevations, and a posterior row of 10 setae rising from low but distinct tubercles well in advance of the back margin. Just in front of the posterior corner of the carinae three setae project outward from the margin.

Second and ensuing non-poriferous segments with an acutely prominent tooth at the anterior corner of the carinae; between this and the posterior corner the margin is more or less plainly bidentate, a stiff seta projecting from each tooth; posterior margin of the carinae with a large tooth near the squarely angled outer corner, a smaller tooth near the base of the carina. Surface of this and ensuing segments with three transverse rows of tubercles, the anterior and middle rows each composed of eight large setiferous tubercles extending onto the lateral carinae; the third row contains six smaller, inconspicuous tubercles close to the posterior margin between its innermost teeth, the tubercles, in the specimens at hand, without setae except on the three segments preceding the last. Poriferous segments with the callus large and conspicuous, preceded by the very acute anterior corner of the carina; pores opening outward. The right hand half of segments 4, 5 and 6 is shown in figure 58, *a*.

Sterna more hispid than those in the genotype.

Gonopods quite similar to those of the genotype but they are much straighter, as shown in figure 58, *b*.

QUISQUICIA INSIGNIS (Chamberlin)

Caraibodesmus insignis Chamberlin, Bull. Mus. Comp. Zool., **62**, p. 234, 1918. One male and three females collected in rotting Yucca stumps above Kencoff, June 24, 1934, by E. M. and H. F. Loomis.

This species was based entirely on females and as no other congeners were definitely known in Hispaniola it was placed in the genus *Caraibodesmus*. The recent finding of males shows the species to belong in the present genus with three newly described species and a fourth species, *Polydesmus sallei* Saussure, tentatively included. Considerable uncertainty surrounds this latter species as no specimens have

been seen by the writer, nor has it been reported from Hispaniola by others since it was described.

Notes on the above specimens of *Q. insignis* are given below.

Largest female 30 mm. long and 3.5 mm. wide; the male is more slender and slightly flatter.

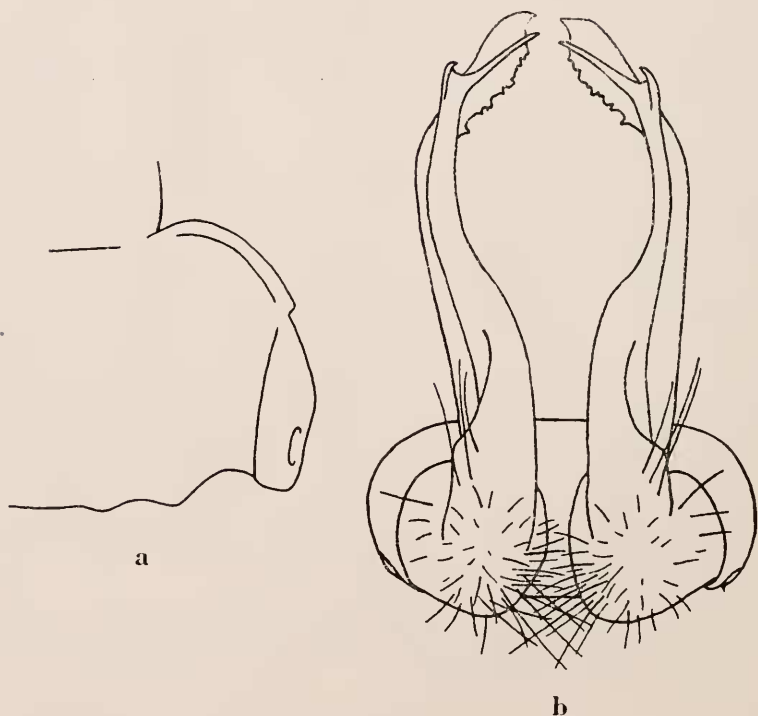


Fig. 59. *Quisquicia insignis*. a, Lateral carina of segment 5 of female; b, Gonopods.

Segments with dorsal setae as in the type species; they are present along the anterior margin of segment 1; and on segment 18 and 19 there is an anterior row of about 8 setae, a median row of 6 setae, and 10 setae along the posterior margin.

The tuberculation of the females is about as given by Chamberlin except that none of the specimens show "ridge-like folds traceable forward nearly entirely or else entirely across the metazonite." The

male has the dorsum almost smooth in conspicuous contrast to the females; only on the last segments are there any indications of the larger tubercles and there are none of the fine granules so evident on segments 1 to 6 or 7 of the females.

Male with a faint tooth on the posterior margin of the segments behind the middle of the body close to the carina.

Pores opening from a thickened callus which is preceded by a much less evident marginal ridge than in *Q. scitula*, and which ends in a rounded angulation instead of a distinct tooth-like corner. Lateral carina of segment 5 of a female is shown in outline in figure 59, *a*.

Sterna concave, not furrowed in either direction, beset with 20 to 30 scattered hairs.

Gonopods as shown in figure 59, *b*.

Pregenital male legs normal.

Segments 3 and 4 with the serrate ridge on the latero-ventral surface much lower and less conspicuous than in *Q. scitula*. Sides of body below the keels finely granular in the females; smooth in the male.

QUISQUICIA RUBENS new species

One female collected on Morne La Selle, at 7,500 feet, by A. Audant. Type in M. C. Z.

Diagnosis. Unicolorous in contrast to the closely related *Q. insignis*; also the pore calluses are less prominent and the preanal scale has the apex produced into a small accessory lobe.

Description. Length 30 mm., width 3.5 mm.

Color of the alcoholic specimen reddish brown throughout, without any trace of black.

Head with the vertex coarsely wrinkled; median furrow deep, the surface on each side of it definitely swollen; front hispid from between the antennae to the labrum; antennae with joints 2 to 6 subequal in length.

First segment with anterior margin raised into a narrow rim; posterior margin triareuate; surface with many tiny scattered tubercles and three rows of larger ones, each tubercle with a tiny pit from which a seta probably projected, as on the ensuing segments similar tubercles occur, and on the penultimate segment several setae remain on the tubercles; on this segment there are about 8 tubercles in the anterior row, 6 in the middle row, and 10 along the posterior margin.

On the ensuing segments the anterior row contains about 6 tubercles, the middle row 6 to 8, and the posterior row 8 to 10 tubercles; on some segments the outer tubercle of the posterior row is developed into a small, slightly produced tooth. Segments 2, 3 and 4 with a small tooth on the lateral margin of the keels near the front corner; no tooth on segment 5, one side of which is shown in figure 60. Body



Fig. 60. *Quisquicia rubens*. Lateral carina of segment 5 of female.

with the dorsum evenly and moderately convex; the lateral carinae continuous with it; carinae or keels narrow, extending but a short distance from the side of the body. Pores opening laterally from a marginal callus which is less swollen than in *Q. insignis*.

Preanal scale sub-triangular, the sides rounded somewhat and the apex produced into a short accessory apex.

Sterna slightly hispid.

QUISQUICIA SALLEI (Saussure)

Polydesmus sallei Saussure, Faun. Myr. Mex., p. 42, 1860.

Odontopeltis sallei Pocock, Jour. Linn. Soc. Lond., **24**, p. 512, 1894.

Leptodesmus sallei Silvestri, Bull. Amer. Mus. Nat. Hist., **24**, p. 575, 1908.

Caraibodesmus (?) *sallei* Chamberlin, Bull. Mus. Comp. Zoöl., **62**, no. 5, p. 236, 1918.

Although Saussure gave Santo Domingo as the only definite locality, the species has not since been identified from Hispaniola. Pocock indicated that he had seen no specimens and his report was based entirely on that of Saussure. Silvestri reported the species from Puerto Rico but if the species really belongs to the Hispaniolan fauna it would be remarkable to find it in another island, as most of the large species of this order are confined to single islands.

POGONODESMUS new genus

Type. *Pogonodesmus pullus* new species.

Diagnosis. In spite of the similarity of the gonopods of this species with those of the genotype and a related species of *Quisquicia* the prominent pore calluses of that genus exclude the present species. The transverse rows of setiferous tubercles and the shape of the gonopods prohibit its inclusion in other genera in which the pores open from the carinae in a similar fashion.

Description. Body moderately long, median portion with sides parallel. Males more slender and with more projecting lateral carinae than the females but with less surface sculpturing. Lateral carinae horizontal, high, near the level of the dorsum. Legs long and slender, much exceeding the sides of the body, especially in the males.

Head completely invested with short, erect hairs; vertex deeply grooved; antennae long and slender.

First segment nearly semi-circular, the antero-lateral margins raised; posterior corners acute; dorsal surface with three transverse rows of setae.

Segments 2 to 5 or 6 with a small tooth at the anterior corner of the lateral carinae. Segments 2 to 19 with three transverse rows of broad and low tubercles each bearing an apical seta. The dorsal and lateral surfaces of the anterior female segments also are densely and coarsely granular or nodular, the granulations lessening toward the rear end of the body. Pores on the usual segments, opening outward from the thickened margin instead of being borne in a special callus.

Last segment produced into a deflexed apex surpassing the anal valves. Valves with thickened and elevated margins. Preanal scale acute behind.

Sterna setose in both sexes.

Gonopods consisting of two slender, erect, quite similar, subparallel joints.

Anterior legs and sterna of both sexes without secondary sexual modifications.

POGONODESMUS PULLUS new species

A male and female collected at Kenscoff, between 3000 and 6000 feet elevation, Nov. 1, 1934 and a female from La Vestite, La Selle range, Sept. 16-23, 1934 by P. J. Darlington. Type and paratypes in M. C. Z.

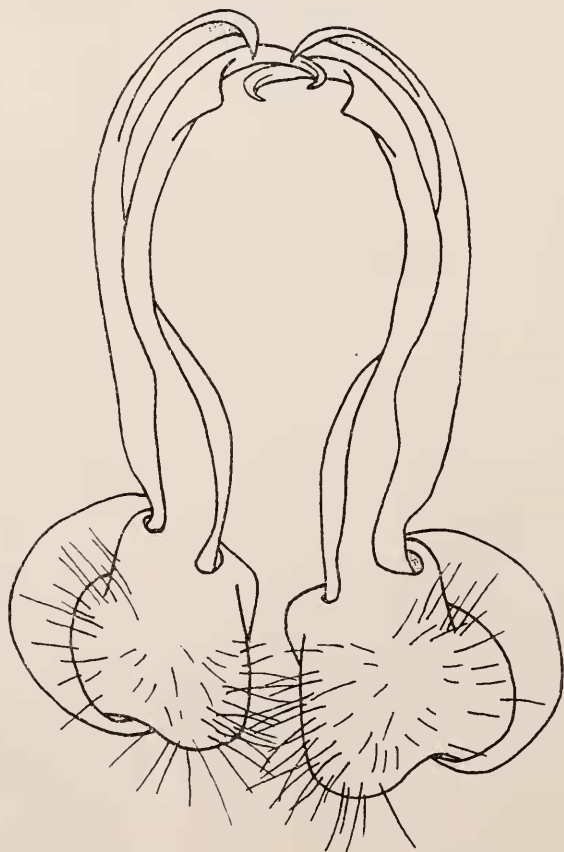


Fig. 61. *Pogonodesmus pullus*. Gonopods.

Description. Length from 32 to 38 mm. Male with more slender body than the female but with lateral carinae projecting farther from the body so that with animals of the same length the two sexes are of subequal width across the back. The male carinae are more elevated,

being level with the middle of the dorsum, and the posterior angles are produced farther caudad, but the females have the dorsal surface densely tubercular whereas the male is smooth except for the three transverse rows of low and broad setiferous tubercles which also are present in the females. In color the posterior corners of the carinae and the posterior half, or less, of the dorsum dark red, elsewhere black; head narrowly red in front, elsewhere black; antennae, legs, and ventral surface light colored.

Antennae long and slender; joints 2 to 6 inclusive subequal in length.

First segment with eight setae close together behind the median portion of the front margin; eight setae in the median row and ten in the row across the posterior quarter. In the males the surface is entirely smooth, the setae not being on tubercles as on the ensuing segments; in the female the surface is densely and finely tuberculate or nodular above and on the sides below the lateral carinae, as are the ensuing segments to near the middle of the body where the tubercles gradually become less apparent except those tubercles bearing the setae which increase slightly in size and prominence; latero-ventral surface of the posterior female segments smooth.

Segments 2 to 19 with an anterior and a median row of setiferous tubercles, six to eight in each row, and a posterior row of ten setiferous tubercles near the margin. In the male the median surface of the carinae is broadly swollen into an evident prominence not to be seen in the female.

Gonopods as shown in figure 61.

APLOPODODESMUS new genus

Type. *Aplopododesmus longipes* new species.

Diagnosis. This genus may be intermediate between *Cyrtaphe* and *Beatadesmus*. It differs from *Cyrtaphe* in the hispid dorsum; toothed margins of most segments; and in having both pairs of gonopods of similar shape. The pores of *Beatadesmus* are surrounded by a thick rim and open laterally whereas in the present genus the pores open on the dorsal surface in a deep depression. From the broken specimens on which *Beatadesmus* was described it was impossible to determine whether or not the dorsal tubercles bore setae, but if not, the condition would constitute a difference.

Description. Body almost seven times as long as broad; widest at segment 2 or 3. Carinae set high on the sides of the body, surface slightly irregular; the dorsum between the carinae flattened, smooth.

Head with a deep furrow on the vertex; anterior surface hispid. Antennae close together, about double the width of the body in length.

Segments with three transverse rows of setae rising directly from the surface instead of from tubercles; dorsum without a transverse depression. Segments 2 to 17 or 18 with a strong tooth on the outer margin of each carina. Segments 4 or 5 to 17 or 18 with teeth on the posterior margin. Segments 17 and 18 with the carinae strongly produced backward, those of segment 19 very much smaller. Pores on the usual segments, opening in a large depression on the surface of the posterior corner of the carina.

Legs long and slender, greatly exceeding the sides of the body. Sterna finely setaceous. All legs similar in the sexes.

Gonopods somewhat like those of *Cyrtaphe* but the anterior and posterior pairs are almost identical in shape and length, being long, slender, and terminating in drawnout points.

APLOPODODESMUS LONGIPES new species

A number of specimens, most of which are badly broken, were collected at 7,500 feet on Morne La Selle by A. Audant. Other specimens from La Vestite, La Selle range, 6000-7000 feet elevation, Sept. 16-23, 1934 by P. J. Darlington. Type and paratypes in M. C. Z.

Description. Length of an unbroken female 35 mm., width 5 mm.; males apparently of same size and proportions.

The color appears to have been light red or brown with the lateral carinae and the posterior margin of the dorsum slightly lighter; poriferous segments similar to the others.

Head with the deep furrow of the vertex terminating between the antennae; two large setae on each side of the furrow at the middle of the vertex; smaller setae are scattered over the front of the head from between the antennae to the clypeus. Antennae slender and about double the width of the body in length; joint 2 slightly longer than the others; joints 3, 4, 5 and 6 subequal.

First segment semicircular, with a narrow raised anterior rim; posterior margin triarcuate; surface smooth but with 25 to 30 erect setae disposed around the segment just inside the margin, and across the middle.

Ensuing segments with dorsal setae in three transverse rows, 8 to 10 setae in both the anterior and median row, and 6 in the last row along the posterior margin between the carinae. (Fig. 62, *a*.) The setae of the first two rows on the carinae rise from tiny tubercles but

all those on the dorsum rise from the smooth surface. Lateral carinae set high on the side of the body, almost continuous with the flattened dorsum but set off from it by a shallow, indefinite, longitudinal depression. Carinae from segment 2 to segment 17 or 18 with a strong tooth on the outer margin some distance behind the anterior corner.

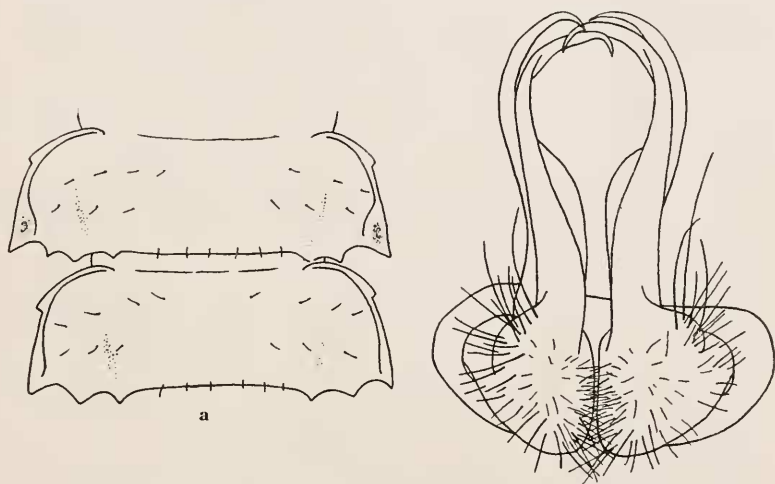


Fig. 62. *Aplopododesmus longipes*. *a*, Segments 5 and 6 of female; *b*, Gonopods.

Segment 4 or 5 to segment 17 or 18 with broad triangular teeth projecting from the posterior margin near the junction of the carina and the dorsum; the anterior segments have two or three teeth on each side; the midbody segments have two teeth each side; and the last segments have but a single tooth on each side; on all segments the outer tooth is the largest. Pores on the usual segments; opening obliquely into a deep depression in the dorsal surface of the posterior angle of the carina. Carinae of segments 17 and 18 large and extending backward, those of segment 19 very much smaller.

Last segment with a narrowed, produced apex much exceeding the valves.

Anal valves with margins high and thin, meeting at nearly their highest point instead of at a re-entrant angle.

Preanal scale large, triangular.

Gonopods as shown in figure 62, *b*.

CYRTAPHE new genus

Type. *Cyrtaphe alternata* new species.

Body slightly attenuated caudad from the fourth segment; the males more strongly so than the females; dorsum of the females moderately convex, the males notably flatter; lateral keels scarcely depressed, even in the males, in the females projecting nearly as far as those of the males, surface of the keels sometimes with several low, tiny, conic tubercles variously placed; surface of the dorsum elsewhere smooth and shining throughout. Pore formula normal.

Head with the usual groove on the vertex; anterior surface, from between the antennal sockets, with numerous rather long setae scattered over it; antennae with joints 2 to 6 inclusive subequal in length.

First segment with the anterior margin behind the head nearly transverse or broadly rounded; posterior margin emarginate at middle and in *C. continuata* with a slight emargination on each side between the angle and the median emargination.

Segments 3 to 5 sometimes with a very tiny tooth on the lateral margin of each keel.

Anal valves with the margins high and thick, the seta in each located near the dorsal fourth. Disc of each valve with the seta just below the middle of the valve. Preanal scale triangular, the apex more or less produced.

Gonopods with each anterior division a more or less simple, hooked structure, of variable width, the apex bending forward and outward; posterior division with the hirsute base short and only moderately stout, the apical portion almost continuous with it, quite slender, forming a long inwardly curved hook with a lobe of variable size projecting inward from the middle of the inner side.

Lateral rim of the opening for the gonopods much higher than the anterior or posterior rim.

Second legs of the males with the inner corner of each coxa slightly produced into a low rounded elevation.

Sternum between the third male legs with a definite, conic tubercle on each side, in the females a lower, less conspicuous prominence on each side.

Sternum between the fourth male legs with a very broad, rounded elevation on each side of the middle, the corresponding sternum of the females not at all elevated on the sides.

Pregenital legs of the males with the second joint much more swollen on the dorsal side than the same joint of these legs in the females.

Key to the Species of Cyrtaphe

- Poriferous segments, almost as fully colored as those without pores; segments 3, 4, and 5 usually with a small but distinct tooth on each lateral margin behind the front angle.....
continuata new
- Poriferous segments with much less color than those without pores; none of the segments with a tooth on the lateral margin behind the front angle.....
- First segment with scarcely any emargination of the posterior margin at middle; keels on some of the posterior segments with small tubercles on the dorsal surface; each anterior division of the gonopods with but a single lobe on the inner side between base and apex; each posterior division thin and rather broad.....*alternata* new
- First segment with a short, deep emargination in the posterior margin at middle; none of the keels with tubercles on the dorsal surface; each anterior division of the gonopods with two lobes on the inner side between base and apex; each posterior division somewhat thicker, narrower, and more recurved...
lobipes new

CYRTAPHE ALTERNATA new species

Plate 1, Fig. 5, Plate 2, Fig. 1

Numerous males (one the type) and females collected on Morne Pilboreau, above Ennery, April 5, 1926. Others from the same locality in 1925, C., and 1927, L. Type in U. S. N. M. Paratype in M. C. Z.

Body from 28 to 33 mm. long.

In alcoholic specimens the head has the vertex and the median part of the front, for a considerable distance below the antennae, dark chestnut brown; the sides of the head, clypeus and labrum yellowish-white. First segment with a rather narrow transverse brown spot near the anterior margin on each side; in fully marked specimens the spot begins at the middle of the front margin on each side and nearly reaches the other spot at the middle of the dorsum, the remainder of the segment white. Second segment with a brown spot on each side

in front, almost completely covered by the first segment but with some of the brown color diffused behind its margin. Third segment dark brown except the white lateral margins and the posterior angles, and

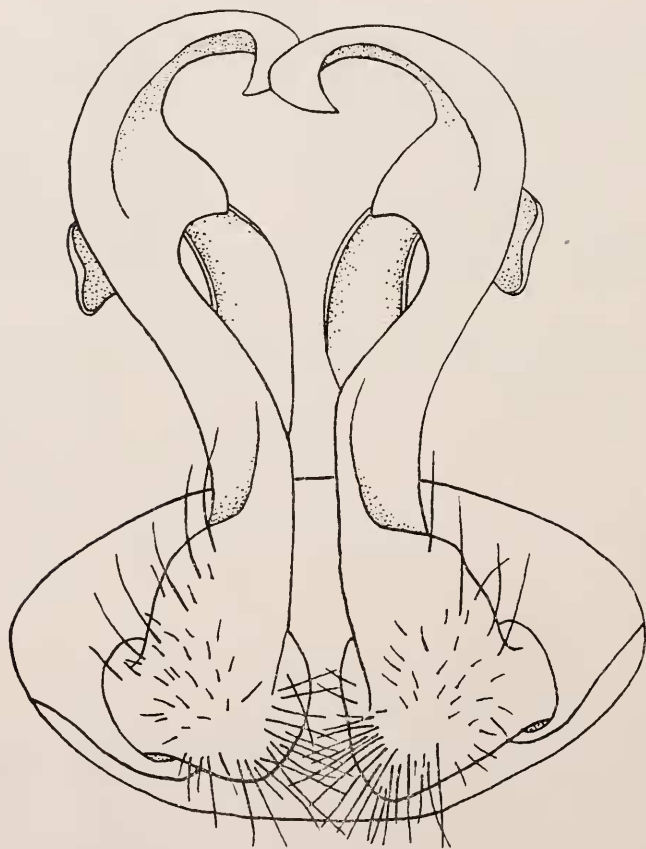


Fig. 63. *Cyrtaphe alternata*. Gonopods.

a brownish-white median area which is broader behind. Ensuing non-poriferous segments dark brown, with light brown lateral margins and a median area, which is broader near the posterior margin of each segment; the light margins and median area decreasing in size from the fourth segment backward. Poriferous segments uniformly white

throughout. Last segment in some specimens brown on each side in front. Sides of the body below the keels brown, grading to white near the base of the legs. Ventral surfaces, anal valves and preanal scale white. Antennae with the first joint white, the other joints light red. Legs with the basal joints colorless, the outer joints tinged with red.

First segment with the anterior margin scarcely rounded at the middle, almost straight across; lateral angle on each side moderately obtuse; emargination at the middle of the posterior margin very shallow.

None of the ensuing segments with a tooth on the lateral margin behind each anterior corner.

Surface of the segments smooth and shining. In some specimens a few small conic tubercles are more or less evident on the surface of the keels, particularly on the posterior segments.

Anal valves with the seta on the disc of each valve well removed from the raised margin; margins especially high, with setiferous tubercles on the outer sides of the margins rather than at or near their crests.

Gonopods with each anterior division broad and thin, the upper portion curving forward, outward and then backward, the apex broadly rounded; each posterior division with a broadly triangular lobe projecting inward from the inner side in front, some distance below the apex (Fig. 63).

Second legs of the males with the inner corner of each coxa slightly produced, forming a distinct shoulder which is completely lacking in the females.

Sternum between the third legs of the males narrower than in the females and with a much higher conic tubercle on each side of the median furrow and close to it; in the females the tubercles are broadly separated.

Sternum between the fourth legs of the males with a broader, higher, more rounded tubercle on each side than the preceding sternum, the tubercles beset with long setae. Sternum between the fourth female legs normal.

CYRTAPHE LOBIPES new species

One male (type) and four females collected at spring near Ennery, May 3, 1925. C. Type in U. S. N. M. Paratype in M. C. Z.

Diagnosis. Very closely related to *C. alternata* and scarcely to be distinguished from it in outward appearance. The gonopods, as shown

in the drawings of the two species, are quite different in several particulars.

Description. Body 28 to 31 mm. long.

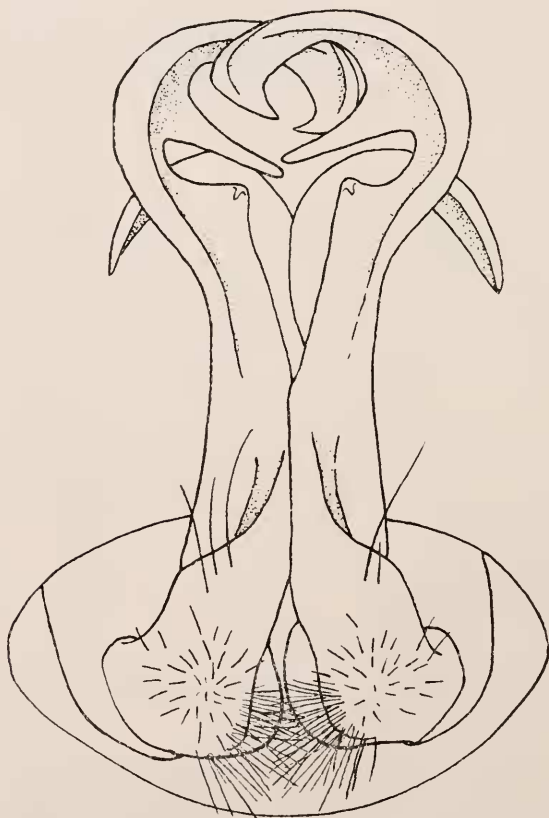


Fig. 64. *Cyrtaphe lobipes*. Gonopods.

In the most fully colored alcoholic specimen the head is dark brown except for a narrow marginal area including the clypeus; antennae dark throughout but with the basal joint lightest. First segment mostly light colored, with a medium sized, transverse, brown spot on either side of the middle of the disc. Second segment brown on each side of the middle in front, median portion and the posterior half of

the segment light. Third segment intermediate in coloration between the second and fourth segment, the latter brown throughout except a light median line which is broader behind than in front. Ensuing non-poriferous segments brown throughout except the posterior angles and an indefinite area at the middle of the posterior margin. Poriferous segments mostly light colored, with an indefinite spot of the dilute brown in front at the middle; posterior poriferous segments lighter than the anterior ones. Last segment brown on the sides. Sides of body below the keels dark brown, slightly lighter near the legs. Anal valves brown on the sides. Preanal scale light brown. Legs tinged with red. Sterna light.

First segment more evenly rounded in front than in *C. alternata*, the emargination at the middle of the posterior margin shorter and deeper.

None of the ensuing segments with a tooth on the lateral margin behind the anterior angle. Surface of the segments smooth and shining and without tubercles on the surface of the keels.

Gonopods (Fig. 64) of much the same shape as those of *C. alternata*; but each posterior division with two lobes or prominences of the inner side between base and apex, the lower one corresponding to the lobe in *C. alternata* but smaller and terminating in a small, vertically bent hook; upper lobe the largest, triangular-acuminate, with no counterpart in *C. alternata*. Anterior divisions of the gonopods thicker than in *C. alternata* and more strongly recurved.

Legs and sterna on the anterior part of the body of the males and females not definitely different from those of the corresponding sex in *C. alternata*.

CYRTAPHE CONTINUATA new species

One male, the type specimen, and many females collected near Trouin, June 22, 1927, C. & L. A female, apparently of this species, was found at Port-au-Prince, May 30, 1923. L. A male and several females from near Trouin, June 26, 1934, E. M. and H. F. Loomis. Two males from Post Terre Rouge, Oct. 5, 1934 by P. J. Darlington. Type in U. S. N. M. Paratype in M. C. Z.

Diagnosis. Readily distinguished from *C. alternata* by the continuously colored segments, those bearing the pores being almost as fully colored as the nonporiferous ones. The form of the first segment and the toothed margin of segments 3 to 5, as well as the shape of the gonopods are some of the most prominent structural peculiarities of this species.

Description. Body from 27 to 35 mm. long.

In life the head is dark chestnut brown, except on the lower sides

and on the labrum which are pink. First segment pink, with a transverse oval spot of dark brown on each side of the middle. Segments 2 to 4 inclusive with the keels and posterior half of each segment pink, the remaining anterior portion of the segment dark brown. The anterior poriferous segments are pink, with a large dark brown spot at the middle in front; posterior poriferous segments with the dark spot larger, reaching back nearly to the posterior margin and laterally to the base of the keels. Nonporiferous segments dark brown, except the pink posterior angles and a narrow area along the middle of the posterior margin which is pink. Anterior subsegments dark brown with a large pinkish-white area at the middle. Last segment pink at tip. Anal valves brown. Preanal scale light brown tinged with pink. Sides of the body brown, becoming lighter near the legs. Sterna and basal joints of the legs light pinkish, outer joints darker red. Antennae with the first joint light red, outer joints brownish-red.

First segment with the anterior margin evenly rounded from side to side; posterior margin with a broad, rather deep median emargination and a less conspicuous one each side between it and the lateral angle; lateral angles somewhat more acute than in *C. alternata*.

Third segment usually with a tiny tooth projecting from the lateral margin of each keel just behind the anterior corner. Segments 4 and 5 with decreasingly smaller teeth in the same position.

Surface of the segments in general smooth and shining but on some of the segments, particularly toward the back end of the body, a few tiny conic tubercles may be present on the surface of the keels.

Anal valves with the seta on each valve closer to the raised rim than in *C. alternata*, the raised margins slightly lower and thicker and the setiferous tubercles located nearer their crests.

Gonopods with each anterior division thickened and tapering gradually from the base to the apex, which is narrowly rounded and curves forward and outward; each posterior division with a broad, low, inconspicuous prominence near the middle of the inner side behind; apical portion of the division more slender and curved than in *C. alternata*, the actual tip more attenuated (Fig. 65).

Second legs of the males with the inner corner of each coxa with a slightly more developed shoulder than in *C. alternata*; females with coxae normal.

Sternum between the third pair of legs of the male narrower than in the females, with 2 broad, low, conic tubercles narrowly separated by the median furrow; in the females the tubercles are broader, lower, and more separated.

Sternum between the fourth pair of legs of the males with a low, broadly rounded, setiferous elevation on each side of the middle.

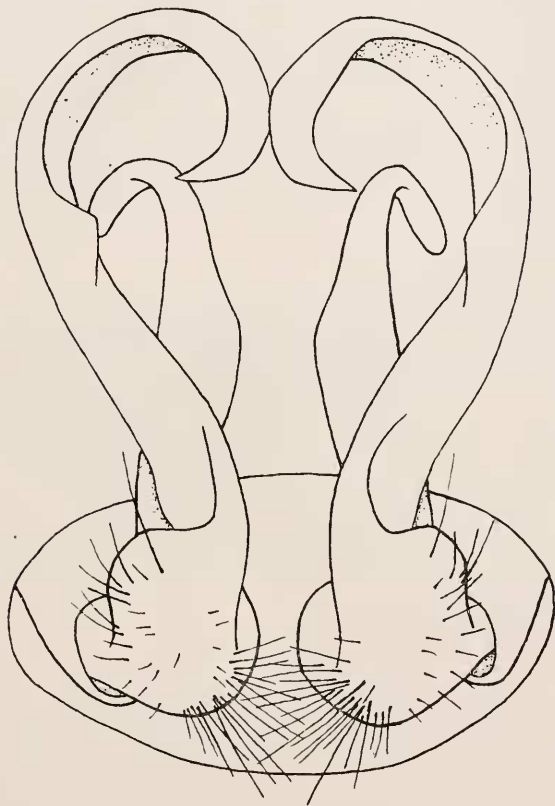


Fig. 65. *Cyrtaphe continuata*. Gonopods.

Sternum between the fifth legs normal as are the sterna between the fourth and fifth legs of the females.

PTERYGIODESMUS new genus

Type. *Pterygiodesmus strumosus* new species.

Diagnosis. The exact position of this genus in the classification system cannot be determined until males are known but the reduced

lateral carinae seem to associate it with *Ricodesmus* from Puerto Rico, although the pores do not open from a special callus as in that genus.

Description. Body of moderate size, the sides parallel to near the back end; dorsum smooth, glabrous, very strongly arched, with lateral carinae rising nearly opposite the middle of the body and scarcely projecting from it except on the first four segments where the carinae are of normal size and have a small tooth at the anterior corner; on other non-poriferous segments the carinae are reduced to faint ridges apparent only on the posterior half of the segments; poriferous carinae thicker and slightly more prominent; pores opening outward from the usual segments.

Head deeply grooved on the vertex; front hispid; antennae rather slender but quite short.

First segment about as wide as the head; semi-circular.

Segments 2 to 4 shorter than those that follow but with the lateral carinae thinner and extending much farther from the sides of the body as in most of the other Hispaniolan genera of the family. On ensuing segments the posterior corners are scarcely produced behind the posterior margin, even on the two segments preceding the last.

Last segment broad at base but narrowing abruptly to a produced tip exceeding the broad, thickly margined anal valves.

Legs short, not projecting far beyond the sides of the body; joint 3 nearly as long as the remaining joints together; sterna broad and with a few small, fine setae.

PTERYGIODESMUS STRUMOSUS new species

One female collected at La Vestite, 6000 to 7000 feet elevation, La Selle range, Sept. 16-23, 1934 by P. J. Darlington. Type in M. C. Z.

Description. Length 30 mm., width 4 mm. Segments light colored throughout except for a brownish band encircling the body and including the constriction between the anterior and posterior subsegments.

Head sparsely hispid on the frontal region, the surface elsewhere smooth and shining.

First segment with evenly rounded anterior margin bordered by a raised rim on the sides; posterior margin broadly emarginate at middle; posterior corners forming nearly right angles.

Segments 2 to 4 with front and outer margins of the lateral carinae bordered by a raised rim, a small tooth at the anterior corner of each carina. Surface below the carinae coarsely wrinkled but on the ensuing

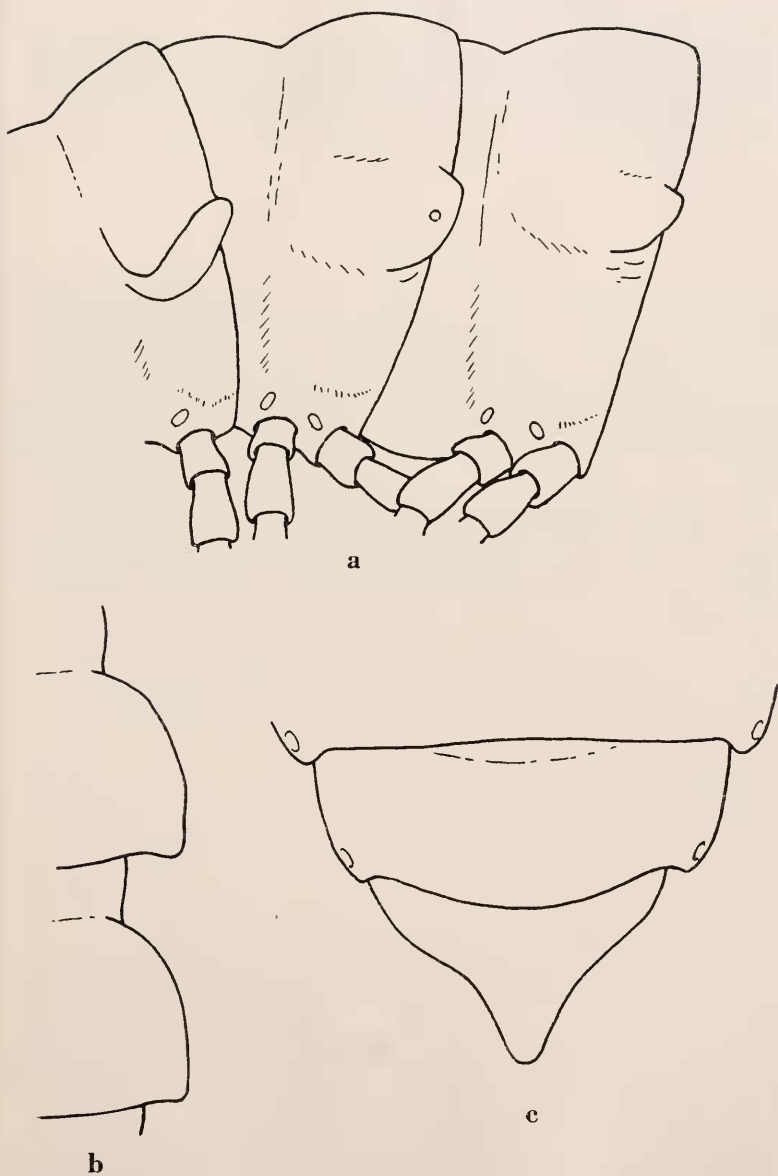


Fig. 66. *Pterygiodesmus strumosus*. a, Lateral view of segments 4, 5 and 6; b, Dorsal view of lateral carinae of segments 5 and 6; c, Dorsal view of last two segments.

Dorsal setae strongly clavate; lateral margins of the carinae simple; first segment oval, without acute, produced, posterior corners

Agonodesmus Loomis

Dorsal setae slender; lateral margins of the carinae dentate; first segment semicircular, with acute posterior corners

Hexadesmus Loomis

TREMATODESMUS new genus

Type. *Trematodesmus setiger* new species.

Diagnosis. This is the largest West Indian member of the family and is without close relatives, but the position of the pores and the arrangement of the dorsal setae associate it, to a certain extent, with *Chilaphrodesmus*. The large setiferous dorsal tubercles rising from the densely pitted surface, and the strikingly dentate lateral carinae, distinguish the genus.

Description. Body moderately slender; dorsum slightly convex transversely with the lateral carinae ascending a little above it; dorsal surface with large, conic, coarsely setiferous tubercles, definitely arranged and rising from the densely pitted surface. Outer margin of the lateral carinae strongly toothed.

Head with clypeal region elevated above the front; antennae rather short, the outer joints finely pubescent, joints 5 and 6 with an oval or semi-circular sensory organ near the distal margin on the posterior side.

First segment narrower than the head and much narrower than the second segment, semi-circular in outline, with posterior corners produced backward and bearing a stout apical bristle; a row of 10 conic, setiferous tubercles along the anterior margin, and a sub-median row of four similar tubercles. (Fig. 67, *a*.)

Second segment with the anterior margin of the body wall, below the lateral carinae, produced forward and outward into a large triangular lobe against which the back side of the head rests.

Beginning with the second segment the lateral carinae have a non-setiferous tooth at the anterior corner which is followed by four larger teeth each terminating in a coarse bristle. Pores on the usual segments, borne dorso-laterally in front of the base of the posterior tooth of the carinae; immediately above the pore is a small setiferous tubercle not present on the other segments. The posterior margin of the segments has a prominent tooth adjacent to the base of the lateral

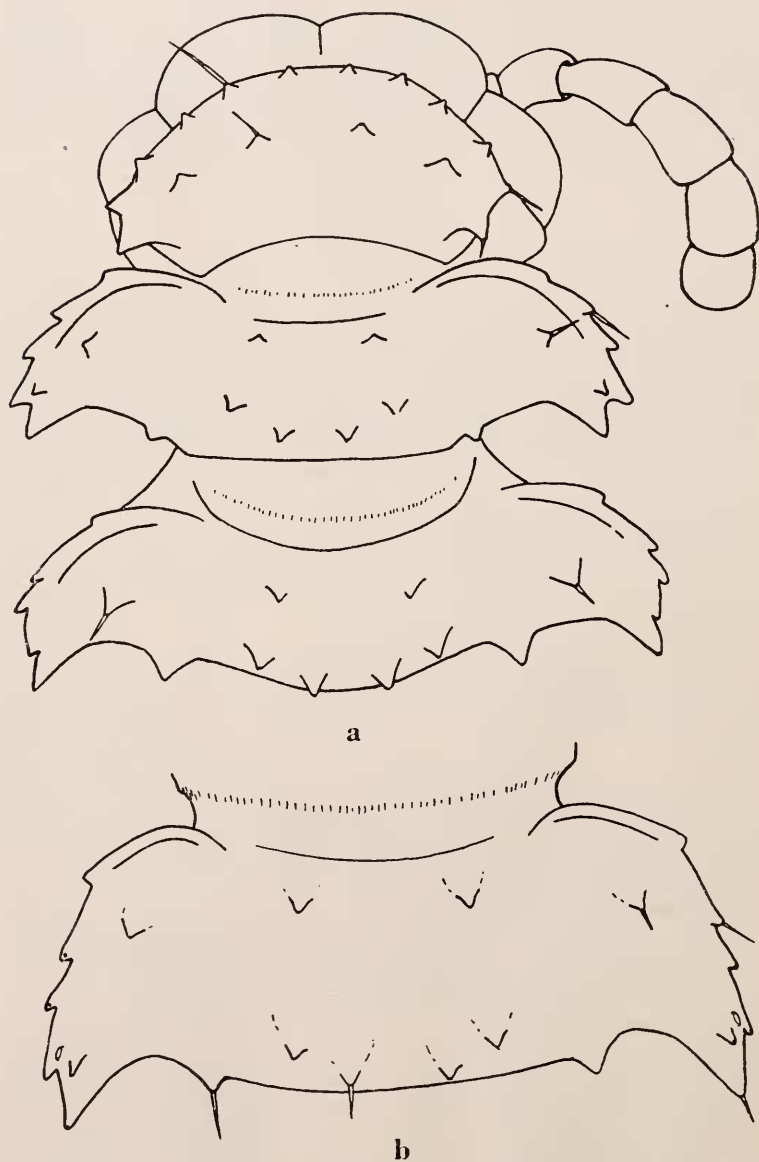


Fig. 67. *Trematodesmus setiger*. *a*, Dorsal view of head and first three segments; *b*, Dorsal view of segment 15.

carinae. Dorsum with two conic, setiferous tubercles in front and four others near the back margin; lateral carinae with a large setiferous tubercle centrally located. A characteristic segment is shown in figure 67, *b*. In addition to the large tubercles the dorsal surface is everywhere finely pitted.

Last segment sub-conic, ending in a slightly deflexed tip surpassing the valves; surface punctate and with about 15 or 16 small setiferous tubercles in three irregular rows, one crossing the middle, another at the posterior fourth, and one just preceding the apex.

Anal valves broad, convex, the margins very thin and scarcely elevated, meeting almost at the level of the surface of the valves.

Preanal scale large, broadly truncated behind.

Males not known.

TREMATODESMUS SETIGER new species

Two mature females and one with 19 segments collected between 3000 and 7800 feet elevation on Morne La Hotte, Oct. 16-17, 1934 by P. J. Darlington. Type and paratypes in M. C. Z.

Description. Length of the largest specimen 18 mm., width 3 mm. Color very dark brown, almost black.

Head with the raised clypeal region smooth and shining, remainder of the head densely punctate, with fine erect setae from the posterior part of the clypeal region to well above the antennae. Groove of the vertex deep.

Poriferous segments with the same number of lateral marginal teeth as the nonporiferous segments but the third setiferous tooth is depressed below the position it occupies on the nonporiferous segments and there is a dorso-lateral tubercle above the pore, not present on the other segments, except segment 2. The constriction encircling the segments just in front of the lateral carinae is deep, broad, less conspicuously pitted and more shining than the surface either side of it; the surface immediately in advance of the constriction is more coarsely pitted than the posterior subsegment.

In the female the ventral surface of the third segment is elevated behind the sternum and coxae of the second legs into a ridge which surpasses the sternum in height, the posterior face of the ridge with a long horizontal depression below the crest.

Other characters are given in the generic description.

AGENODESMUS Loomis

AGENODESMUS RETICULATUS Loomis

Agenodesmus reticulatus Loomis, Smiths. Misc. Coll., **89**, no. 14, pp. 38-41, 1934.

Haitian localities are Fond des Negre; between Petit Goave and Leogane; and Le Borgne.

This is the smallest milliped of the Western Hemisphere, the largest specimen seen measuring but two millimeters in length and a quarter of a millimeter in width. It is a rapid moving little creature, usually found among dead leaves in rather moist locations.

HEXADESMUS Loomis

HEXADESMUS LATERIDENS Loomis

Hexadesmus lateridens Loomis, Bull. Mus. Comp. Zoöl., **75**, pp. 362-363, 1933.

An immature specimen of this species was collected at Petite Riviere de Artibonite. The type locality is in Cuba, and the species also has been found in the islands of St. Kitts and Carriacou.

CHILAPHRODESMUS Loomis

CHILAPHRODESMUS RUBELLUS Loomis

Chilaphrodesmus rubellus Loomis, Smiths, Misc. Coll., **89**, no. 14, pp. 42-44, 1934.

The type locality is the summit of Morne Pilboreau. Specimens also were found within the Citadel, and between Kenscoff and Petionville, L.

MESETHODESMUS Chamberlin

MESETHODESMUS HAITIANUS Chamberlin

Mesethodesmus haitianus Chamberlin, Bull. Mus. Comp. Zoöl., **62**, p. 248, 1918.

Known only from the original collection at Furcy.

DASYDONTUS new genus

Type *Dasyodontus hispaniolus* new species.

Diagnosis. This genus is unique in having 2 strong teeth arising from the posterior surface of the dorsum on each side and projecting beyond the hind margin from segments 1 to 18 inclusive. The long hairs of the dorsal surface, and the strongly toothed margin of the lateral carinae combine further to facilitate recognition of the genus.

Although the animal is of small size it has the full complement of 20 segments and the gonopods of the male show closer relationship to *Polydesmus* than to the group containing such genera as *Brachydesmus*, *Agendesmus* and *Chilaphrodesmus*.

Description. Body tiny, slender, composed of head and 20 segments which have the surface shining and rather thickly invested with long, erect hairs, each rising from a swollen base or a minute tubercle difficult to distinguish. Anterior subsegments, ventral portions of the posterior subsegments, sterna, anal valves, and preanal scale densely impressed with large round pits. The general aspect is of a *Polydesmus* but the sculpturing is different.

Head exposed on the sides and in front of segment 1 from above; thickly beset with shorter hairs than those of the segments. Antennae widely separated, rather short and stout; joint 6 longest and thickest; joint 2 considerably shorter than 6 but next to it in length.

First segment slightly narrower than the head or the second segment, nearly semicircular in outline, strongly convex, definitely swollen on each side adjacent to the posterior angle; hairs along the front margin considerably longer than those of the disc.

Segments 1 to 18 inclusive with 2 setiferous conic teeth arising from the posterior part of the dorsum on each side near the posterior angle and projecting beyond the back margin, the teeth most conspicuous on segments 3 and 4. Lateral margins of segments 2 to 19 with distinct, setae-bearing teeth, the tooth at the posterior corner of each carina larger than the others and strongly produced backward; the setae on these teeth are longer and heavier than the hairs of the dorsum. Lateral carinae of segment 2 with 5 teeth, segments 3, 4 and 6 each with 3 teeth; segments 5 and 7 to 18 with 4 teeth. On segment 19 the lateral carinae are nearly obsolete, being represented by only the posterior tooth on each side.

Pores present on segments 5, 7, 9, 10, 12, 13, 15-19, opening from a slight cone on the dorsal surface near the edge of the keels.

Last segment ending in a deflexed, setiferous mucro, considerably exceeding the anal valves.

Gonopods resembling those of *Polydesmus* rather than of the smaller members of the family.

First male legs reduced in size but none of the other pregenital legs specially modified.

Sternum between the second females legs broad and with a transverse concave area occupying much of it, other legs and sterna not modified.

DASYDONTUS HISPANIOLUS new species

A mature male (type) and female and a young male collected at Le Borgne, March 26, 1930, by W. H. Jenkins and O. F. Cook. Type in U. S. N. M. Paratype in M. C. Z.

Length 4.5 mm., width 0.6 mm.

Color in alcohol light brown.

Head broader than segment 1, shining, and covered with moderately long hairs over its entire surface; median groove confined to the vertex; distance between the antennae greater than the length of the first and second joints combined; joint 6 longest and broadest, about equal in length to joints 4 and 5 together; joint 2 about two thirds as long as joint 6 (Fig. 68, *a*.)

First segment somewhat intermediate in shape between semi-circular and oval, the posterior angles abruptly rounded; dorsal surface near each posterior angle definitely swollen above the hind margin and bearing 2 conic teeth, which project beyond the margin when the animal is viewed from above, the outer tooth largest; both with a short hair arising from the upper side between the base and the apex. Surface of the segment with many long, erect hairs rising from swollen bases or very tiny, indistinct tubercles, requiring high magnification to be seen; the series of hairs along the anterior margin more uniformly arranged than those behind, which are somewhat shorter. Segments 1 to 3 shown in figure 68, *b*.

Second segment but slightly wider than segment 1; keels produced forward in front, the outer margin of each longer than the margins of the 2 immediately succeeding segments and with 5 distinct, setiferous teeth increasing in size from front to back, with the posterior one especially prominent; setae much longer than the hairs of the dorsum. On each side near the posterior angle 2 strong, sharply conic, setiferous teeth project back from the dorsum beyond the posterior margin as on segment 1. Dorsum covered with hairs similar to those of the first segment; with a definite anterior row, a less definite posterior row, and between the two a number of more or less scattered hairs.

Third and fourth segments with the lateral margins much shorter than those of the second segment; each with 3 marginal teeth. The conic tubercles as on the foregoing segments but slightly larger; hairs as on segment 2.

Fifth segment with the lateral margins considerably longer than those of the 2 preceding segments, each with 4 marginal teeth; the dorsum as on the foregoing segments except that the dorsal tubercles are not quite as large.

Sixth segment with 3 teeth along the outer margin of the carinae.
Ensuing segments with 4 teeth along the outer margin of the car-

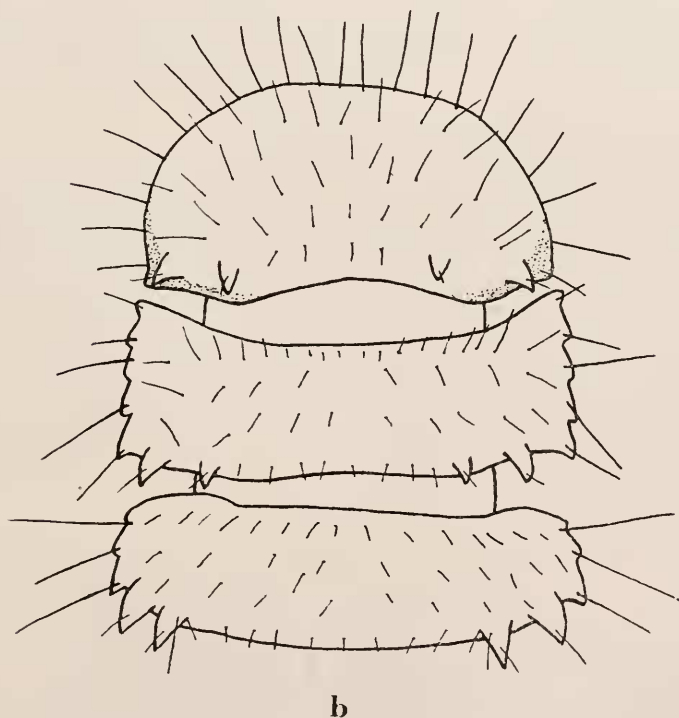
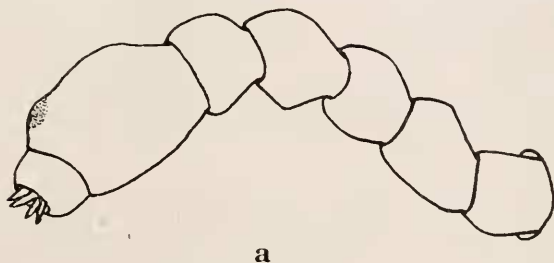


Fig. 68. *Dasyodontus hispaniolus*. a, Antenna; b, Segments 1, 2 and 3, dorsal view. The head was not drawn but is considerably wider than segment 1 and visible in front of it from above.

inae; the conic tubercles on the dorsum above the posterior margin quite uniform in size but considerably smaller than those of segments

3 and 4; median portion of the dorsum with a very faint transverse impression.

Penultimate segment with the carinae rudimentary, the lateral teeth represented by only the one at the posterior corner on each side; dorsum without the conic tubercles on each side above the back margin. Ventral surface with a series of hairs along the posterior margin, and in front of this a few scattered hairs at middle.

Anal valves with thin, raised margins; surface moderately convex, filled with large, round pits.

Preanal scale large, elliptic; the seta on each side arising from a large, prominent tubercle; surface pitted similarly to the valves.

Anterior subsegments descending abruptly at the posterior fourth to join the posterior subsegment; the surface filled with relatively large, round, rather shallow, highly polished pits, becoming smaller toward the front of the subsegment. Posterior subsegments below the carinae impressed with slightly larger pits than those on the anterior subsegments. Sterna also somewhat pitted and with a few setae; a broad, transverse depression also evident.

The gonopods, encumbered with dirt difficult to remove, are apparently definitely Polydesmid in type, each having a slightly enlarged, hairy basal portion, from the anterior part of which the slender terminal portion arises and projects forward over the sternum of the legs of the sixth segment; the tip of this portion is divided into two short prongs of which the outer one appears to be longest and curving toward the body.

Female with sternum of the second legs broader than the one on either side, distinctly convex, with a large, transversely oval concavity at the middle appearing to be somewhat spongy within and containing a few short setae. Sternum of the third legs very narrow, coxae almost touching. Ensuing sterna broad.

Family CHYTODESMIDAE

Key to the Hispaniolan genera of Chytodesmidae

- First segment with posterior margin crenately lobed . . . *Lobodesmus* new
 First segment with posterior margin not lobed
 Dorsum, including the carinae, very flat; carinae projecting from above
 the middle of the body, none of the margins with deep in-
 cisions *Dodesmus* Cook

- Dorsum moderately to strongly convex; carinae projecting from opposite or below the middle of the body, and with at least one margin deeply incised.
- Dorsum moderately convex; carinae narrow, projecting from opposite the middle of the body; the posterior margin of each carina with a single deep conspicuous incision. *Coccoelasma* new
- Dorsum strongly convex; carinae wide, projecting from below the middle of the body; posterior margin of each carina with several deep incisions.
- Principal body segments with longitudinal rows of high, slender tubercles distinctly bent toward the rear; carinae with the margins definitely elevated, anterior and posterior margins incised, lateral margin entire. *Cyphotylus* new
- Principal body segments with longitudinal rows of broad, low tubercles; margins of the carinae not elevated but all margins deeply incised. *Iomoides* Loomis

DOCODESMUS Cook

In describing *Cryptodesmus vincenti*, Pocock referred to the sternum of the eighth somite of the male being furnished in front with a pair of tubercles tipped with a brush of hairs, and a somewhat similar tubercle on each coxa of the anterior legs of this somite. These specializations apparently are of specific importance and are not present in any of the Hispaniolan species thus far known. In strictly generic characters these species agree with *vincenti*. The presence of repugnatorial pores in *vincenti* has been pointed out by Cook, and they are found in the Hispaniolan species, which may be separated by the following key.

Key to the Hispaniolan species of Docodesmus

- Large animals, from 16 to 19 mm. long. *haitiensis* Chamberlin
- Small animals, not exceeding 10 mm. in length.
- Color dark brown, almost black; dorsal sculpturing distinct; posterior subsegments with a raised rim extending across the anterior margin of the keels and the dorsum. *parrior* Chamberlin
- Color light brown; dorsal sculpturing rather indistinct; posterior subsegments with a raised rim on the anterior margin of the keels but not present between them across the dorsum. *semiseptus* new

DOCODESMUS HAITIENSIS Chamberlin

Docodesmus haitiensis Chamberlin, Bull. Mus. Comp. Zoöl., **62**, no. 5, p. 216, 1918.

The species has been collected in the following localities. Diquini, (type locality); Ennery; Petionville; Furey; Jacmel; (W. M. Mann); Kenscoff; Trouin; between Leogane and Petit Goave; Carrefour, Riviere Froid; Christophe's Citadel; C. & L. Morne La Hotte and Etang La Chau, Oct. 1934, P. J. Darlington.

A female collected on Morne Pilboreau above Ennery has the ventral crest of the third segment shorter than in the southern specimens and the crest on each side behind it is higher and longer. A male from the same locality appears to be no different from the southern forms and a series collected at the Citadel is in agreement with them.

This species is rather light brown and reaches a length of 19 mm. and a width of 4.5 mm. In addition to the features described by Chamberlin the areas along the front margin of segment 1 are distinctly longer than broad; the posterior margin is straight across the median third, the lateral third, on each side directed forward, not covering the anterior margin of segment 2 near the angles.

Lateral expansions of the segments reaching far from the sides of the body; elevated areas on the convex portion of the dorsum rather low and not especially distinct, and with small granules in addition to the larger ones, particularly on the second transverse series of areas; sulci along the posterior margin rather short, the intervening spaces nearly square; anterior margin of the segments, except the first and last, with a thin raised rim extending from one anterior angle to the other.

Penultimate segment with the posterior angles large and strongly produced backward.

Third segment of the females beneath with a long, very high, thin, backwardly rolled crest immediately behind the second pair of legs and with a short, low crest each side behind the ends of the large crest.

Coxae of the second legs of the female produced backward into broad flat, rounded lobes below the level of the crest of segment 3.

DOCODESMUS PARVIOR Chamberlin

Plate 3, Fig. 3

Docodesmus parvior Chamberlin, Bull. Mus. Comp. Zoöl., **62**, no. 5, p. 218, 1918.

The type locality is Furey, (W. M. Mann). Collected at Petionville; Diquini; Carrefour; Riviere Froid; between Leogane and Petit Goave; Fond des Negre. C. & L. Kenscoff, 1934, L.

This species is dark brown, almost dull black, and the largest specimens do not exceed 10 mm. in length and 2 mm. in breadth. Males more slender than the females.

The areas along the front margin of the first segment are broader than long, the margin itself being proportionally narrower than in *D. haitiensis*; posterior margin on each side of the median third only slightly produced forward, narrowly covering the anterior margin of the second segment on each side near the angles.

Lateral expansions of the segments short, not extending far from the sides of the body; elevated areas on the median portion of the dorsum higher and more distinct than in *D. haitiensis* and with no secondary granules in addition to the large granules; sulci along the posterior margin long, the intervening spaces longer than broad; anterior margin of the segments, except the first and last, with a fine raised rim extending across the body from an anterior angle to the other.

Penultimate segment with the posterior angles small and frequently not much more conspicuous than the intervening marginal projections.

Ventral crest of the third segment of the females longer than in *D. haitiensis* but not as high, and there are no small secondary crests behind it.

DOCODESMUS SEMISEPTUS new species

A male (type) and female collected on Morne Pilboreau, above Ennery, July 8, 1927. C. & L. Type in U. S. N. M. Paratype in M. C. Z.

Diagnosis. This species is distinguished from *D. parvior* by the lighter color; less distinct sculpturing of the dorsum; the interrupted raised rim of the anterior margin of the segments and the more strongly produced posterior angles of the carinae.

Description. Color light brown; length 8 mm., width 1.7 mm.

First segment narrowed in the male the angles not reaching to the anterior angles of the second segment; surface somewhat uneven but without definite raised areas or granules on the median portion; of the 12 marginal areas the median 4 are quite narrow as compared with the next 3 on each side, the center one of which is twice as wide as any pair of the 4 median areas in the male, but in the female the median 4 are not quite as narrow.

Segments with the granules nearly obsolete, the large dorsal areas disposed as in the other species but very indefinite in outline, especially the outer one on each side in front, which has no median granule evident, thus there are 2 granules on the anterior part and 4 on the posterior part of each segment; longitudinal sulci of the posterior margin behind the 2 inner areas extremely short and inconspicuous and separated by 2 or 3 times their length; lateral margins of the segments straighter and somewhat longer than in *D. parvior*, the posterior cor-

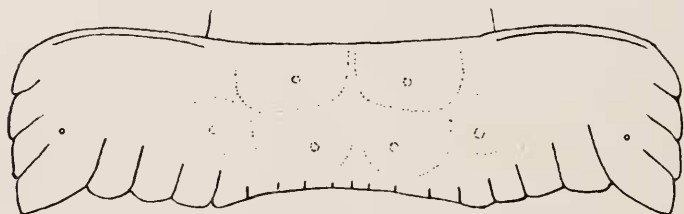


Fig. 69. *Docodesmus semiseptus*. Segment 12 of male, dorsal view.

ners being more produced caudad, as is especially noticeable from the middle of the body to the penultimate segment inclusive; posterior corners of the penultimate segment very long and slender; segments, except the first and last, with a fine raised anterior marginal rim on the lateral expansions or keels but none across the middle of the body; posterior subsegments descend rather gradually to the anterior subsegments. Segment 12 is shown in figure 69.

Sterna slightly broader and flatter than in *D. parvior*.

Gonopods *in situ* not noticeably different from those of *D. parvior*.

Ventral crest of the third segment of the female present as a thin, raised rim as long as in *D. parvior* but not approaching the same height.

LOBODESMUS new genus

Type. *Lobodesmus granosus* new species.

Diagnosis. Relationship with *Tridesmus* is indicated by the trilobed poriferous carinae, but the more slender body, smaller first segment scalloped along the posterior margin, and the six-lobed posterior margin of the other segments are characters peculiar to this genus.

Description. Body about six times as long as broad, narrowing gradually at the ends; lateral carinae level with the dorsum; dorsal surface with distinct tubercles and dense granulations; legs extending somewhat beyond the sides of the body.

Head with the front bearing many fine erect hairs to above the base of the antennae; vertex not grooved at middle; antennae long and slender.

First segment elliptical, short, considerably narrower than segment 2; anterior margin only slightly expanded over the head and with ten distinct lobes; posterior margin almost evenly rounded from side to side and with eight lobes, of which the four median ones are largest; surface granular and with two transverse rows of large tubercles.

Segments 2 to 4 increasing in width; lateral carinae with three lobes of which the last is the largest and somewhat produced backward; segment 5 with only two lateral lobes but thereafter the poriferous carinae are trilobed to segment 16 where four lobes are very faintly apparent; posterior margin of segments 2 to 19 with six conspicuous lobes or crenations; surface finely granular and with two transverse rows of large tubercles in front of the scalloped posterior margin, the four median scallops of which each contain a smaller tubercle.

Segments 17, 18 and 19 gradually narrowing to the small last segment which scarcely surpasses the tips of the carinae of segment 19.

Gonopods simple, consisting of a swollen basal joint from which a long erect terminal joint rises.

LOBODESMUS GRANOSUS new species

A single male collected between 3000 and 7800 feet elevation on Morne La Hotte, Oct. 16-17, 1934 by P. J. Darlington. Type in M. C. Z.

Description. Length 9 mm., with 1.5 mm. Color pink in alcohol.

Head with the vertex evenly convex, finely and densely granular and without a median groove. Antennae long and slender; joint 5 the longest; joints 5 and 6 with a sensory cluster of short papillae near the apex on the outer side; joints 6 and 7 subequal in length but the latter much more slender. (Fig. 70, *a*.)

First segment as described for the genus and as shown in figure 70, *b*.

Ensuing segments as described for the genus and as shown in

figure 70, *c*. for segment 10. The outer margin of the lateral carinae has many very short and very inconspicuous erect hairs. Segments 16, 17 and 18 with the poriferous lobe very strongly produced back-

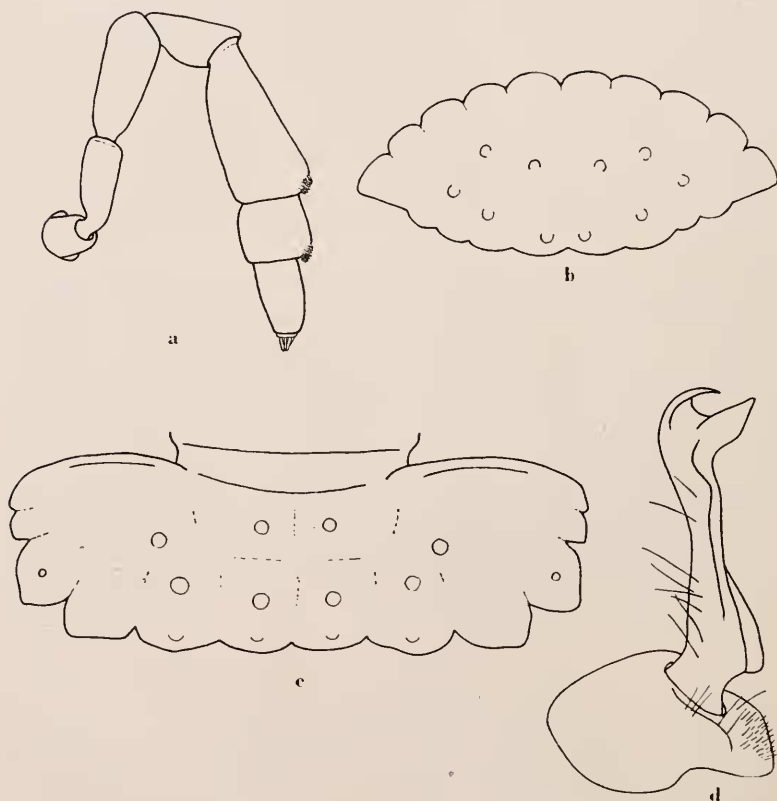


Fig. 70. *Lobodesmus granosus*. *a*, Antenna; *b*, Segment 1, dorsal view; *c*, Segment 10, dorsal view; *d*, Left gonopod.

ward and sharply angled at apex; segment 19 has the poriferous lobes strongly produced, narrow, and rounded behind.

Gonopods as shown in figure 70, *d*.

Legs of moderate length but somewhat exceeding the sides of the body because the lateral carinae do not project as far as in closely related genera; pregenital legs without special modifications.

COCOELASMA new genus

Type. *Coccoelasma incisura* new species.

Diagnosis. This genus is definitely associated with *Docodesmus* as attested by the proportions of the body and antennae; the location of the pores; the squamate areas of the dorsum; and the structure of the male organs. However, in *Coccoelasma* the dorsum is more convex and is covered with fine granules; the first segment is narrower than the second and has a very narrow anterior margin; the ensuing segments have 3 instead of 2 areas in the longitudinal rows; and the posterior margin of each keel has a very deep incision. *Stictodesmus* Cook, from Colombia, is a very closely related genus having the first segment narrower than the second, and a deep notch in the posterior margin of the keels, but the dorsal surface apparently has no granules or tubercles and the rectangular areas are very indistinct; the keels of the fifth segment have 4 lateral lobes; and the keels of the penultimate segment are scarcely produced backward.

Description. Body small, moderately slender, nearly 7 times as long as broad; dorsum rather convex (Fig. 71, *a*), the entire surface densely granular, median sulcus faint but evident; lateral keels scarcely depressed, slanting slightly downward, not quite horizontal, projecting from the body a distance less than half the diameter of the body cavity.

Head strongly convex; surface above the level of the antennae extremely finely and densely granular; median furrow present; anterior surface smooth and shining. Antennae long, strongly clavate; joints 1 and 4 subequal in length, shorter than either joint 2 or 3, of which joint 3 is the longest, two-thirds as long as joint 5 which is fully twice as wide; joint 6 not quite as long as joint 2; joint 7 half as long as joint 6.

First segment narrower than segment 2, barely covering the head from directly above, nearly flat, subelliptic in outline; front margin broadly rounded, with 10 rather indistinct scallops, the expanded portion very narrow, not definitely defined, horizontal; lateral angles obtuse; posterior margin more transverse than the front margin. Surface very finely and densely granular, with two transverse rows of small, rounded, indistinct tubercles, 4 tubercles in the anterior row and 6 in the posterior row.

Second segment definitely longer at the middle than either of the next 2 segments, the anterior margin curving strongly forward on each side from the median line to the front corner of the keel; lateral

margin of the keel over half again as long as the margin of the keels on either segment 3 or 4.

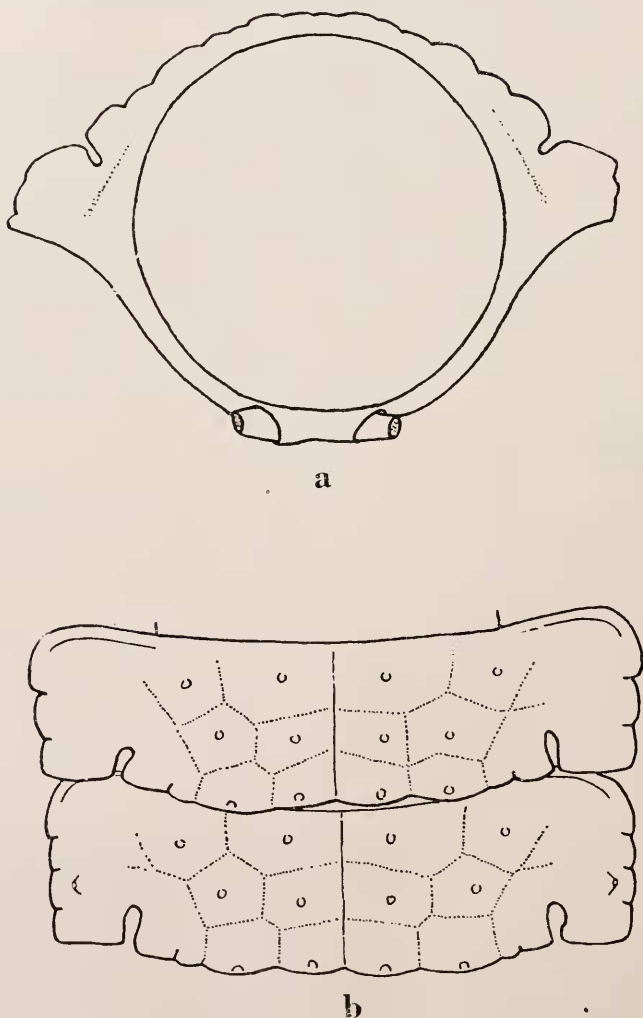


Fig. 71. *Coccoelasma incisura*. a, Segment 10, posterior view; b, Segments 14 and 15, dorsal view.

All nonporiferous segments from the second to the fourteenth inclusive, with the keels 3-lobed, the sulcus which terminates in the

sinus between each of the lobes short and indistinct. Segment 5 with the keels 3-lobed, but on all the other pore-bearing segments the keels are 4-lobed. Pores present on segments 5, 7, 9, 10, 12, 13, 15 to 19, but not plainly visible, opening from the top of a tiny tubercle near the middle of the third area of the keel and not far from the lateral margin.

In the posterior margin of each keel near its base, on all segments except the first and last, there is a very deep incision which has a constricted neck; the lobe of the margin just mesad of the incision has its outer corner somewhat turned up; between this lobe and the outer rectangular area of the posterior series on the dorsum a smaller lobe is usually visible, although set off by only a shallow indentation. All segments except the first with the anterior margin continuous from the outer corner of one keel to the other, not lobed, but on the anterior segments the margin is raised into a thin but distinct rim somewhat irregular at the apex, this rim soon disappears after the middle of the body is passed.

Segments with the surface of the dorsum, exclusive of the keels, faintly set off by impressed lines into transverse, rectangular areas arranged in 3 transverse series, 4 areas in each series and each area with a small, low, rounded, seta-bearing tubercle in its center, the remaining surface of each area and the surface of the keels is very densely covered with fine granules. Segments 14 and 15 are shown in figure 71, *b*.

Penultimate segment with the keels produced caudad behind the posterior margin for a considerable distance, the intervening margin straight across and with 6 prominent rounded scallops; similar scallops are present on the segments in front of the penultimate but are decreasingly evident.

Last segment with 2 large conic, somewhat depressed tubercles on the dorsal surface; posterior margin with 6 small, setiferous lobes; the papillate cone arising just under the apical margin and slightly exceeding it.

Anal valves strongly convex, the margins high and thick.

Prenal scale subtriangular, with 2 seta-bearing tubercles.

Sterna as broad as the first joint of a leg, median depression conspicuous.

Gonopods similar in general structure to those of *Docodesmus*.

Males with the sternum between the pair of legs just behind the gonopods somewhat broader than the sterna that follow.

Females with the entire ventral surface of the third segment pro-

duced to the level of the first joint of the legs following it; the anterior margin raised into a low, thin rim or crest.

Coccoelasma incisura new species

Plate 3, Fig. 4

Many specimens, including the male type, collected among dead leaves on the Ile de Cabret, near Bayeux, May 12, and July 13, 1927. L. Other specimens were collected the same year on Morne Brigand, near Bayeux; and on Morne Pilboreau, above Ennery. Type in U. S. N. M. Paratype in M. C. Z.

Length of the largest specimen 6 mm., width .9 mm.

Living color brown with a tinge of pink, posterior end of the body somewhat lighter colored than the anterior end.

Segments with the outer tubercles on each side less evident than the inner rows, the tubercles of the middle and last row increasingly closer to the middle line of the segment and smaller than those of the first series, especially on all but the first few segments.

Other characters appear in the generic description.

Cyphotylus new genus

Type. *Cyphotylus prolatus* new species.

Diagnosis. Most closely related to *Coccoelasma* but somewhat more convex, the keels more depressed and extending further from the sides of the body; first segment as broad as the second and with a very broad, reflexed anterior margin; ensuing segments with 4 longitudinal rows of high tubercles bent toward the rear; front and back margin of each keel with several deep incisions; posterior margin of the penultimate segment produced backward between the produced keels, almost hiding the last segment from above.

Description. Body with the dorsum notably more convex than in *Coccoelasma*, the lateral keels definitely depressed, projecting from opposite or slightly below the middle of the body and extending further from the sides of the body. Dorsum with 4 parallel, longitudinal rows of high, slender, very conspicuous tubercles bent toward the rear; remainder of the surface more or less incrustated with dirt but where the surface is visible it is shining and does not appear to be granular; median line present but not very evident.

Head with the vertex finely granular; median sulcus present; antennae much as in *Coccoclasma* but a little longer and stouter.

First segment as wide as the second, strongly convex, with the anterior border strongly rounded, very broad, smooth and shining, held horizontally but with the outer margin flexed upward; border with 10 elongate areas forming very indefinite scallops on the front margin; surface of the disc possibly somewhat granular beneath the incrustation but with 2 conspicuous transverse rows of high, slender tubercles, 4 tubercles in the anterior row and 6 in the posterior one; posterior margin with a fine, raised rim extending from one lateral angle to the other.

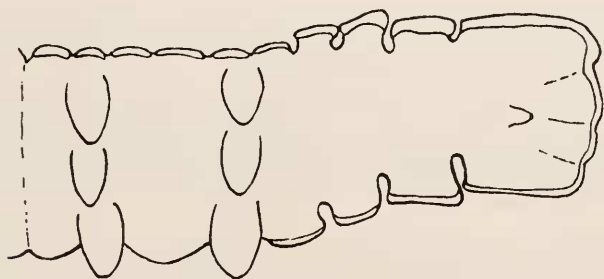


Fig. 72. *Cyphotylus prolatus*. Right half of segment 10, dorsal view.

Second segment with the lateral margin of each keel slightly longer than that on either of the 2 succeeding keels.

Nonporiferous segments from the second to the fourteenth, and also the poriferous fifth segment, with the lateral margin of each keel 3-lobed; other poriferous segments with the keels 4-lobed. Pore formula normal. The pore is borne on a small, slender, inconspicuous tubercle some distance from the lateral margin near the mesial end of the sulcus between the inner lobes of the lateral margin of the keel.

Surface of all segments from the second to the penultimate inclusive with 4 parallel, longitudinal rows of tubercles, 3 tubercles in each row; the tubercles slender, higher than their diameter, and strongly bent caudad; those on the posterior segments slightly larger and conspicuously longer than on the other segments. Although impossible to observe with accuracy, because of the accumulation of dirt, the surface elsewhere appears to be shining and faintly raised into transverse rectangular areas, perhaps similar in arrangement to those in *Coccoclasma*; the surface of the lateral keels seems also to be smooth

and shining except when a pore tubercle is present; keels with the margins narrowly but very definitely elevated, especially the anterior margin; inner half of the anterior margin of each keel with 3 deeply separated, apically elevated lobes; inner half of the posterior margin with 2 lobes separated from themselves and the rest of the margin by deep, bottle-necked incisions, the outer lobe longest; outer half of the anterior and posterior margin of each keel continuous; anterior margin of the dorsum of each segment with a number of small, raised scallops; posterior margin of the dorsum on each side of the middle with a large scallop on each side of the last tubercle in the dorsal rows.

The right half of segment 10 is shown in figure 72.

Penultimate segment with the posterior corner of each keel strongly produced backward; posterior margin between the keels very much produced backward from the base of the keels, the median portion of the margin exceeding the produced corners of the keels and hiding all but the apex of the last segment. Last tubercle in each of the longitudinal rows surpassing the posterior margin for a considerable distance.

Last segment with the dorsum not exposed from above but with 2 small tubercles visible beneath the overhanging margin of the preceding segment; posterior margin with 2 small, setiferous teeth on each side of the papillate apical cone.

Anal valves moderately convex, with high, rather thick margins.

Preanal scale with the posterior margin rather broadly rounded at the middle but emarginate on either side.

Sterna much narrower than in *Coccoclasma*, not as wide as the basal joint of one of the legs.

Male organs not fully developed as the type has but 19 segments.

CYPHOTYLUS PROLATUS new species

A single male with but 19 segments was collected on Morne Brigand, near Bayeux, July 16, 1927, L., with many specimens of *Coccoclasma incisura*. Type in U. S. N. M.

The specimen is broken into several pieces and accurate measurement is impossible, however, it appears to have been of the size and proportions of the species with which it was collected and at the time it was collected it was not sufficiently different in color to be recognized as another species.

Many of the characters included in the generic description are doubtless of specific value but as only a single species is thus far known no attempt has been made to separate these characters.

IOMOIDES Loomis

As their names imply, the species may be recognized by whether or not the dorsum is hispid or glabrous.

IOMOIDES HISPIDUS Loomis

Iomoides hispidus Loomis, Smiths, Misc. Coll., **89**, no. 14, pp. 51-52, 1934.

The type locality is the lower slope of Morne Brigand, facing Bayeux. Other specimens were collected to Le Borgne, C.

IOMOIDES GLABRA Loomis

Iomoides glabra Loomis, Smiths, Misc. Coll., **89**, no. 14, p. 53, 1934.

The Citadel is the type locality. Two males collected beneath fallen leaves in a coffee plantation between Kenscoff and Petionville, July 2, 1934, L.

Family EOROMIDAE new¹

A new milliped, with such unusual characters that its relationships must remain in doubt, was found on the Southern Peninsula of Haiti in 1926. In view of the divergence from other forms now recognized in the system of classification it seems necessary to describe this creature as the type of a new family, the *Eoromidae*, named with reference to the markedly ascending position of the enormously developed lateral carinae.

Description. Body small and rather loose-jointed, about 5 times as long as broad; composed of 20 segments; dorsum of the segments rather narrow and flat, giving rise to the very large carinae which are elevated at an angle of about 45 degrees.

Head large, subglobular, not completely hidden by the first segment; antennae of moderate length, widely separated at base.

First segment deeply concave; the anterior margin greatly elevated, much wider than the posterior margin and distinctly lobed, the two lateral lobes greatly exceeding the four median lobes.

¹ The descriptions and remarks pertaining to this milliped were prepared jointly by O. F. Cook and H. F. Loomis.

Ensuing segments with the dorsum smooth, lacking a median longitudinal furrow, narrow and nearly straight across; the carinae subcylindrical or subclavate, terminating in a very large oblique knob, tuberculate on the surface; the basal portion of the carinae of mature specimens usually is sheathed in a thick crust of spongy exudation or other extraneous material which makes the carinae appear much stouter than they actually are. Margins of the segments and carinae, from the second to the penultimate segment, entire, without distinct lobes or incisions.

Repugnatorial pores borne in a slight depression on the outer side of the terminal knob of the carinae, each pore surrounded by a raised rim. Pore formula normal, except that the series terminates on segment 18.

Penultimate segment with the carinae relatively small, flattened, thin, produced caudad at the sides, but not elevated, and without repugnatorial pores.

Last segment with the basal portion exposed dorsally between the carinae of the penultimate segment, the projecting apical portion broadly triangular, abruptly narrowed near the tip.

Anal valves moderately convex, the margins broad and slightly elevated.

Preanal scale truncate at apex, with a seta on each side.

Legs reaching a little beyond the sides of the body, rather slender, the last joint longest. No secondary sexual specializations noted in the legs of either sex.

Sterna moderately broad, exceeding the diameter of the first joint of the leg.

Gonopods with the basal joint on each side large, bulbous; the long, simple, apical joint exposed and carried forward horizontally.

The relationships of the family are difficult to determine, as *Eoromus* is a most anomalous milliped. The structure of the first segment and of the male gonopods, and the laterally borne repugnatorial pores, may point to relationship with such groups as the Stylodesmidae, Hercodesmidae, and Stiodesmidae, although the analogies with these families may not extend beyond the fact that the pores open from definitely formed tubercles on the margins of the lateral carinae. The carinae of other groups are thin, with two or more lateral lobes, and the projection of the carinae is outward and downward, instead of upward. The large dorsal processes of *Stylodesmus* may be considered as a parallel evolution, on account of their position, but do not bear the repugnatorial pores, which are on lateral carinae in the usual

position, much lower on the body. The dorsum in the *Hercedesmidae* and *Stiodesmidae* is convex and tuberculate, whereas in *Eoromus* it is nearly straight across, and the surface is smooth, instead of sculptured.

Close relatives of *Eoromus* may yet be found, but it is possible that this milliped is the only extant member of an aberrant line reaching back into geologic times, as seems to be the case with other extremely specialized forms in this order. The family *Hylomidae* was established for a Chinese genus having erect, several-branched carinae, a condition not approached in any other living milliped, as far as known, but finding certain analogies among the fossil forms. Another outstanding example is the *Pandirodesmidae*, based on *Pandirodesmus disparipes* Silvestri, from British Guiana, which seems worthy of full family rank, although Silvestri considered it only as a subfamily under the *Trachelodesmidae*, stating that conservatism made him unwilling to increase the number of recognized families. The tubiform spiracles of *Pandirodesmus*, the exceedingly long anterior pair of legs, and the much shorter posterior legs, with the different insertion of the legs on the segments, are specializations not indicated in any other milliped. Whether a family or a subfamily should be recognized, will depend upon the existence of an intermediate series to connect with *Trachelodesmus*. With *Eoromus* also it is possible that the discovery of intermediate forms may show an alliance with some of the groups already known.

EOROMUS new genus

Type. *Eoromus aberrans* new species.

Characterized by the unique armature of the body: the massive uplifted carinae: to which the name alludes. Other genera have large carinae as flattened expansions of the body segments or as slender processes, while in the present type the carinae not only project farther than the body cylinder is wide, but are robust and thickened toward the end, so that the form as well as the proportions of the carinae are different from those of other groups.

A peculiar spongy incrustation encases the basal portion of the carinae and occurs with such regularity on all of the mid-body segments as to give the appearance of a structural feature, though the material is readily removable, like a surface accumulation or exudate. A small median area, circular or annular, also is covered with such material, as shown in Plate 3, figure 5. Other millipeds have hispid

surfaces that hold particles of soil, but such accumulations are not so definitely formed or so regularly repeated as those on the segments of *Eoromus*.

EOROMUS ABERRANS new species

Plate 3, Fig. 5 & 6

A mature male (type) and female, and four males with 19 segments were collected at the base of a limestone cliff, south of the divide near Trouin, on the road to Jacmel, April 11, 1926, C.

Type in the U. S. N. M. Paratype in M. C. Z.

Description. Length of the male 8 mm., width 1.6 mm.; female 9 mm. long, 1.8 mm. wide.

Head partially hidden by the first segment, sub-globular, not at all flattened in front; vertex with a fine median furrow, the surface smooth but usually with a thin removable coating; the surface elsewhere smooth and slightly shining. Labrum with three minute median teeth. Antennae broadly separated, moderately long, strongly clavate and not abruptly geniculate; joint 5 longest and thickest, joints 3 and 2 decreasing in order, joints 4 and 6 subequal, joints 1 and 7 shortest, subequal. (Fig. 73, *a*). The head and anterior segments are seen in two views in figure 73, *b* and *c*.

First segment considerably narrower than the ensuing segments, subquadrate; anterior and posterior margins transversely parallel, the anterior much broader and almost vertically elevated above the head, rather thin, divided into six lobes or scallops; the four inner lobes small and subequal, the two lateral lobes more than twice as wide as the median lobes and projecting obliquely upward, like the carinae of the following segments. Lateral margins strongly converging backward, each with a small distinct tooth in front of the middle. Surface of the segment smooth and shining when the layer of incrustation is removed, and with a large central concavity, deepest in front.

Ensuing segments with the dorsum much narrower than the body cavity (Fig. 73, *d*); the dorsum of each segment strongly convex longitudinally but nearly straight transversely; surface smooth and shining throughout but usually with a removable coating thinly dispersed, except at the middle, where each segment shows a broad, rounded elevation somewhat spongy in texture. Lateral carinae nearly as broad as the body cavity, arising from the side of the dorsum and projecting obliquely upward at an angle of 45 degrees; the carinae of the anterior segments are directed slightly forward while those of the last three or

four segments are directed increasingly backward; the basal portion of each carina constricted, cylindric, smooth, except for a tooth or

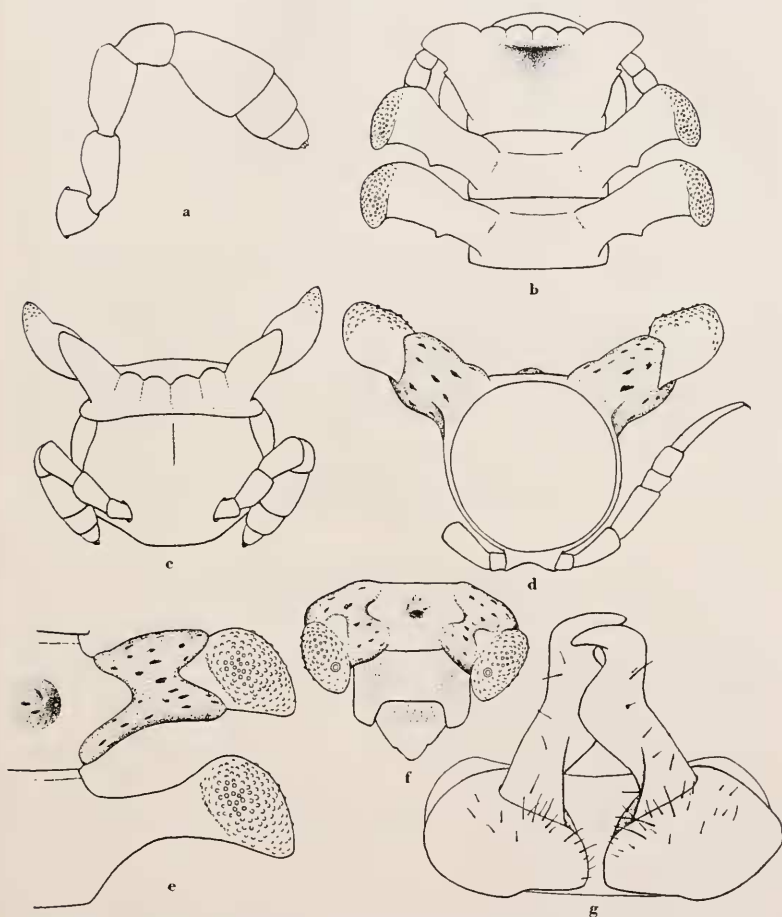


Fig. 73. *Eoromus aberrans*. a, Antenna; b, Head and first three segments of 19-segmented male, dorsal view; c, Head and first two segments, front view; d, Segment 13, posterior view; e, Lateral carinae of segments 11 and 12, dorsal view. The incrustation of dirt removed from the carina and dorsum of segment 12; f, Segments 18, 19 and 20, dorsal view; g, Gonopods.

notch behind, near the middle, reduced or lacking on the posterior segments. The basal portion of each carina is encased in a definitely

formed, thick, sheathing crust or accumulation (Fig. 73, *e*), easily removed when dry and of a brittle, spongiform texture, the surface of the crust rather smooth and even, though showing occasional cavities which may be accidental. Though at first considered as a part of the animal, the crust was found on careful examination to separate readily from the body walls, and in the 19-segmented forms the crust material was slight and variable in amount, the most recently molted specimen having a smaller accumulation than others which had molted somewhat earlier. In the specimens with 19 segments the basal portions of the lateral carinae have a few short hairs which undoubtedly would aid in the accumulation of extraneous material in forming the sheath, but hairs are not visible on the dorsum of these specimens. Hairs may be present on the carinae of mature specimens and may break off when the incrustation is removed. The incrustation is brown while the projecting terminal portion of the carina is white, thickened and knob-like, with the surface densely tuberculate; the pore is surrounded by a broad raised rim, located in a shallow depression of the lateral surface, near the posterior corner of the carina, becoming more dorsal in position on the last few poriferous segments (Fig. 73, *f*). The pores are found on segments 5, 7, 9, 10, 12, 13, 15 to 18.

Segments 2 and 3 with the outer ends of the carinae much less inflated and tuberculate than on the following segments.

Penultimate segment with the lateral carinae thin and very small, as compared with the large, elevated carinae of segment 18, almost horizontal and directed nearly straight back, greatly exceeding the posterior margin of the dorsum, the apical margin of each carina obliquely truncate (Fig. 73, *f*).

Last segment with the posterior half exceeding the carinae of the preceding segment, the 4-papillate apex scarcely deflexed, with a small scallop on each side (Fig. 73, *f*). Rim enclosing the anal valves and preanal scale nearly circular.

Anal valves moderately convex, the margins broad and slightly raised.

Preanal scale subtriangular, the apex broadly and squarely truncate, with a seta at each angle.

Legs rather slender, reaching somewhat beyond the carinae; outer joint longest; third joint next in length, followed by the second joint, joints 1 and 4 subequal, exceeded in length by joint 5. None of the legs of either sex with specialized sexual characters.

Sterna somewhat broader than the length of the basal joint of the leg; deeply furrowed lengthwise and crosswise.

Gonopods with the basal joint large, subhemispherical, opening on the inner side, the outer joint projecting forward from the opening, quite simple, stout, thickest near the middle, and bowed mesad; the apex bent sharply mesad and somewhat produced (Fig. 73, *g*).

Sternum of the seventh male legs considerably broader than that of the sixth legs, and with a broad median concavity, closed in front but open behind for the accommodation of the tips of the gonopods.

Females with the ventral margin of the third segment raised into a thin, slightly revolute crest, immediately behind the second pair of legs.

The specimens were found in humus adjacent to a small clearing, at the base of a cliff that faced to the north. A protracted search was made for additional material, and in subsequent visits many adjacent places were examined, but not other specimens were found. The general appearance of the living animal, when partially coiled, so that the projecting carinae are separated, suggests a bizarre insect larva, rather than a milliped.

Family STIODESMIDAE

The Hispaniolan genera are separated in the ensuing key.

Key to the Hispaniolan genera of Stioodesmidae

- Repugnatorial pores in a nearly continuous series, on segments 5, 7-18, omitted from segment 6; dorsum of principal segments with 4 nearly touching, transverse rows of distinct tubercles, those of the anterior row the largest and projecting forward over the anterior subsegment, those of the posterior row small.....*Homodesmus* Chamberlin
- Repugnatorial pores in a more interrupted series, absent from segments 6, 8, 11 and 14 at least; dorsum with the principal tubercles more widely separated and arranged in longitudinal rows.....
- Pores on only 5 segments; 5, 7, 9, 12 and 15.....*Penteporus* new
- Pores on 7 segments, at least, including segments 10 and 12.....
- Pores present on 7 segments, 5, 7, 9, 10, 12, 13, and 15.....*Psochodesmus* Pocock
- Pores present on 8 segments, 5, 7, 9, 10, 12, 13, 15 and 16.....
- Carinae of segments 3 to 19 inclusive, bilobed..*Lophodesmus* Pocock
- Carinae of some of segments 3 to 19 with 3 or even 4 distinct lobes..*Cynedesmus* Cook

HOMODESMUS Chamberlin

HOMODESMUS PARVUS Chamberlin

Homodesmus parvus Chamberlin, Bull. Mus. Comp. Zool. **62**, no. 5, p. 223, 1918.
Type locality Manneville. Collected at Thor, near Port au Prince; Ennery;
Source Matelas; and between Leogane and Petit Goave in 1927. C. & L.

The following features were noted in addition to those mentioned in the original description of the species.

Antennae with the sixth joint considerably longer than any other joint. Keels of second segment definitely four lobed.

All segments except the first and the last 3 with 4 distinct transverse rows of tubercles; the first row largest and strongly projecting forward beyond the anterior margin high over the surface of the anterior subsegment; the following 2 rows with the tubercles slightly decreasing in size; last row along the posterior margin, the tubercles low and transverse, in contrast to the very convex tubercles of the other rows, and not projecting beyond the margin. Last 3 segments lacking the fourth row of tubercles, the third row extending along the posterior margin. Posterior ventral margin of segments elevated on either side of the middle.

Last segment with a low, hollow, truncated cone on the ventral side between the apical margin and the anal valves, containing 4 setiferous papillae.

Anal valves nearly flat, the margins not elevated; surface finely and very densely granular.

Legs moderately separated by elevated sternal processes, the anterior process of each segment slightly wider and higher than the other process.

PENTEPORUS new genus

Type. *Penteporus crenellatus* new species.

Diagnosis. In general appearance suggesting *Cynedesmus* or related genera, but immediately distinguished by having only five poriferous segments: 5, 7, 9, 12, and 15. The Mexican genus *Deeaporodesmus*, and the Cuban *Heteropente*, have but five poriferous segments which are respectively as follows: 5, 7, 10, 13, and 15; and 5, 7, 10, 13, and 16.

Description. Body very strongly arched, the lateral carinae rather short and extending obliquely downward and outward, and equalled but not exceeded by the tips of the legs.

Head rather strongly convex, very densely and irregularly granular above the upper limits of the antennal sockets; antennae of moderate length; joints 1 and 4 subequal, exceeded in length by joints 2 and 3, of which the latter is longest; joint 5 as long as the two preceding joints together and much wider than either; joint 6 about two-thirds as long as 5 and not quite twice as long as 7, which is longer than broad.

First segment with the anterior margin scarcely flaring, divided into 12 lobes of which the two outer ones on each side are narrower than the inner ones, which are subequal in width. Surface densely and coarsely granular, with an anterior row of four large round tubercles, and a posterior row of six somewhat larger tubercles.

Ensuing segments densely granular, with 4 longitudinal rows of large round tubercles, 3 tubercles in each row. Lobes of the lateral keels and of the posterior margin, to the first row of large tubercles, separated by deep, more or less lageniform incisions. Posterior margin between the rows of large tubercles with broad lobes projecting slightly upward and backward. Pores borne on rather long cylindrical processes almost completely occupying the posterior lobe of the keels of segments 5, 7, 9, 12 and 15, and projecting obliquely caudo-ectad.

Last segment with 6 marginal lobes; surface with a low tubercle on each side just in front of the apex.

Anal valves smooth, slightly convex, the margins decidedly thickened but very little elevated. Preanal scale triangular, smooth.

Legs very narrowly separated by the sterna.

Third segment of the females with a long, low, vertical crest immediately behind the second pair of legs.

PENTEPORUS CRENELLATUS new species

The female type, another female and 2 immature specimens collected beneath coffee bushes at Fond des Negre, June 28, 1927, C. & L. Type in U. S. N. M. Paratype in M. C. Z.

Living color of the posterior subsegments light brown above, lighter below, becoming nearly white near the feet; anterior subsegments, anal valves, preanal scale, legs and antennae white; head with the anterior portion white to between the antennae, above which the surface is light brown.

First segment with the outer marginal lobe on each side very narrow, the adjoining lobe twice as wide but narrower than the

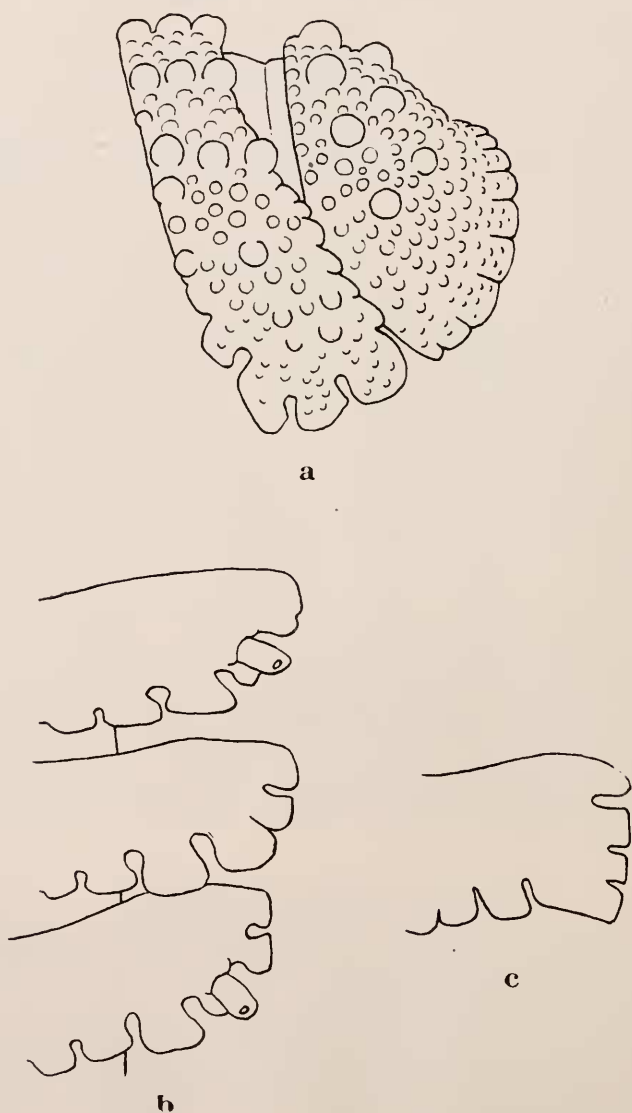


Fig. 74. *Penteporus crenellatus*. a, Segments 1 and 2, oblique lateral view; b, Lateral carinae of segments 5, 6 and 7, oblique lateral view; c, Lateral carina of segment 17 in outline.

ensuing ones, which are of uniform width; all the lobes short and scarcely at all produced forward, the surface finely granular. Surface of the disc conspicuously and quite irregularly granular-tubercular, with a transverse anterior row of 4 large rounded tubercles and a posterior row of 6 larger ones (Fig. 74, *a*).

Ensuing segments to the penultimate with coarse, highly elevated granules densely scattered over the surface and with 4 longitudinal rows of large, high, rounded tubercles, 3 tubercles in each row; between the middle tubercle of the outer row and the keel on the nonporiferous segments there is a single tubercle nearly as large as those of the dorsal rows. On the posterior segments the tubercles are larger and higher than on the other segments, the posterior one in each row extends high above the margin without being definitely produced backward.

Except for segment 5, segments 2 to 16 inclusive have the lateral margins of the keels divided into 3 lobes by deep, more or less flask-shaped incisions; on the poriferous segments other than the fifth the last lobe is almost entirely occupied or replaced by the cylindrical pore process (Fig. 74, *b*). On segment 5 there is a single large lobe in front of the one bearing the pore, instead of 2 smaller lobes. Segments 17 to 19 have 4 lateral lobes (Fig. 74, *c*). The last segment has 6 marginal lobes, the outer one on each side the largest. All lobes with the surface finely granular in contrast to the coarsely granular dorsum. From segment 2 to segment 19 inclusive all segments have 3 large, deeply separated lobes on the posterior margin on each side between the last lobe of the keel and the end of the lower row of large dorsal tubercles; between the outer and inner row of tubercles there is a broad, slightly raised and protruding lobe and 2 similar lobes between the inner rows of tubercles.

Coxae of the second legs with rather prominent inner corners contiguous mesially.

In the paratype female the incisions between the lateral and posterior lobes are so filled with dirt as to be almost completely obliterated, causing the margins to appear undulated rather than very definitely lobed.

PSOCHODESMUS Cook

Xerodesmus Chamberlin, Proc. Calif. Acad. Sci., **12**, p. 403, 1923.

Tidopterus Chamberlin, Zoologica, New York Zool. Soc., **3**, no. 21, p. 420, 1923.

Dominicodesmus Chamberlin, Proc. Biol. Soc. Washington, **36**, p. 189, 1923.

PSOCHODESMUS GRANULOFRONS (Chamberlin)

Treseolobus granulofrons Chamberlin, Bull. Mus. Comp. Zoöl., **62**, p. 221, 1918.
Dominicodesmus geophilus Chamberlin, Proc. Biol. Soc. Washington, **36**, p. 189, 1923.

The specimens described as *T. granulofrons* came from Jacmel. *D. geophilus* was described from a specimen found at Washington, D. C. in soil about a palm plant from Puerto Plata, Dominican Republic. The present collection contains specimens from Thor, near Port-au-Prince; Ennery; Morne Pilboreau; near Plaisance; and Petite Riviere de Artibonite. The species seems to be well distributed through the West Indies, having been found in five other islands.

CYNEDESMUS COOK

CYNEDESMUS VARILOBATUS new species

Plate 3, Fig. 7.

Numerous specimens, including the male type, were collected beneath leaves on the ground in a coffee planting near the road going down the hill east of Petit Goave from Leogane, June 28, 1927. C. & L. A female with 19 segments collected at Diquini, June 26, 1927, also appears to belong to this species. Type in U. S. N. M. Paratype in M. C. Z.

Description. Largest specimen 7.2 mm. long and 1.3 mm. wide.

Head with the vertex dark brown to the upper limits of the antennal sockets between and below which it is white; antennae also white.

First segment and the posterior division of the subsequent segments blackish-brown above, somewhat lighter below; last segment a little lighter on the dorsum than are the other segments; poriferous tubercles white; anterior subsegments white throughout, as are the anal valves, preanal scale, legs and sterna.

Head with the dark portion densely granular-tuberculate. Antennae with joint 3 longer than joint 2 or 4; joint 5 broader than the others and twice as long as joint 4 or 6; joint 6 slightly longer than joint 4.

First segment with the anterior margin divided into 10 equal lobes. Surface densely, finely granular, with a transverse anterior row of 4 large granules or tubercles and a posterior row of 6 similar tubercles, of which the inner 2 are the largest.

Succeeding segments densely granular and with 4 longitudinal rows of large tubercles, 3 tubercles in each row; on several segments in front of the last one the posterior tubercle in each row projects beyond

the posterior margin; granules between the 2 inner rows of tubercles numerous and not arranged in longitudinal series. Nonporiferous segments from segment 2 to segment 14 inclusive with the lateral margin of the keels tri-lobed, the keels of segments 17, 18 and 19 with 4 lobes; last segment with 3 lobes on each side of the middle of the posterior margin. Segment 5 with a single lobe in front of the poriferous tubercle; all the other pore-bearing segments with 2 lobes in front of the tubercles.

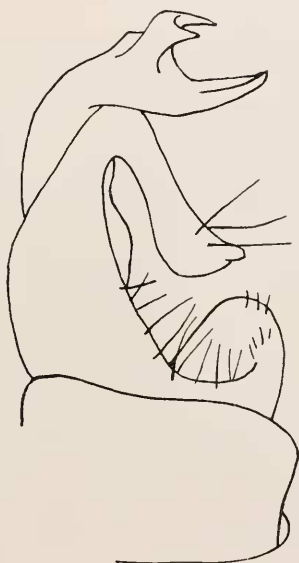


Fig. 75. *Cynedesmus varilobatus*. Gonopod, lateral view.

Anal valves nearly flat, the margins slightly raised.

Gonopods shown in lateral view in figure 75.

Males with the coxa of each of the second legs with a rounded swelling on the inner corner. Sternum between the sixth legs narrow, normal; sternum between the seventh legs very broad and depressed far below the level of the preceding sternum to accommodate the anterior part of the gonopods.

Females with a very long, thin, raised rim on the ventral side of segment 3 immediately behind the second pair of legs.

LOPHODESMUS Pocock

LOPHODESMUS CARAIBIANUS (Chamberlin)

Plate 3, Fig. 8

Treseolobus caraibianus Chamberlin, Bull. Mus. Comp. Zoöl., **62**, p. 220-1, 1918.

Cynedesmus caraibianus (Chamberlin), Proc. U. S. Nat. Mus., **60** p. 59, 1922. Specimens were collected in the following places: Ennery, Thor, Source Matelas, and Leogane in 1925 and 1927. C. & L.

The following characters were not given in the original description.

Living color brownish with a distinct tinge of pink; explanate anterior margin of segment 1 and the lateral keels of the segments lighter; surface above and on the under side of the keels peppered with very tiny black points; anterior subsegments and the surface of the posterior subsegments in the region of the legs, the anal valves, pre-anal scale, antennae, and legs white.

Dorsum very strongly arched; keels greatly depressed and produced outward further than in *Cynedesmus*.

Head greatly flattened in front; surface above the antennae brown, rather coarsely granular, distinctly elevated, and limited on each side by a definite ridge which extends upward from just above the antennal socket; a median sulcus, which widens conspicuously in front, crosses the area. Surface between and below the antennae smooth and shining, white. Antennae very short and stout, received in deep recesses which extend upward and outward; joints 1, 2, 3, 4, and 6 subequal in length; joint 5 wider than any of the others and nearly twice as long, but still scarcely longer than broad.

Anal valves long and narrow; both the outer and inner margins elevated, the intervening surface distinctly concave.

In general form the gonopods somewhat resemble those of *L. laminatus* as shown in Pocock's drawings, the hollow basal joint enclosing the extremely crassate apical joint.

Sterna between all legs narrow; the sternum between the fourth legs of the male produced in front into a high, thin lobe with the sides slowly converging toward the narrowly transverse apex, the lobe curving slightly forward from the base to apex. *Lophodesmus laminatus* Pocock is described as having a raised process on the sternum of the fifth segment but it is not shown in the drawings.

Females with the ventral portion of the third segment raised into a long, moderately thin crest behind the second pair of legs.

The lobation of the lateral keels, the form of the gonopods and the presence of a process on the sternum between the fourth legs plainly places this species in the same series as the Central American species Pocock included under the East Indian *Lophodesmus*. Hence this is a member of one of the few genera common to Central America and Hispaniola. The remarkably strong tuberculation of segment 1 and the presence of 4 rows of dorsal tubercles distinguish this species from those described by Pocock.

Family HERCODESMIDAE

Two genera constitute this predominantly African family, not only in Hispaniola, but elsewhere in the Western Hemisphere. The first genus, *Styraxodesmus*, is distinguished by having only four poriferous segments, 5, 10, 13 and 16, and the tubercles of the first segment are not noticeably larger than those of the ensuing segments. *Dilophops* may be recognized by the presence of pores on segments, 5, 7, 9, 12, 13, 15 and 16, and the tubercles of segment 1 are very much larger than those of the segments that follow.

STYRAXODESMUS Chamberlin

These animals usually have an incrustation of dirt which obliterates most of the dorsal sculpturing, only the large tubercles showing through to advantage. At first the incrustation might be mistaken for part of the animal, but with care it may be scratched off with a needle.

The gonopods, as observed in *S. ater* new species, have the basal joints transverse-hemispherical, opening from the mesial face and capable of enclosing the small terminal joints.

STYRAXODESMUS FURCATUS Chamberlin

Styraxodesmus furcatus Chamberlin, Bull. Mus. Comp. Zoöl., **62**, No. 5, p. 222, 1918.

Type locality Jacmel.

Dr. Nathan Banks, of the Museum of Comparative Zoölogy at Cambridge, Mass., kindly examined the type of this species and wrote me as follows: "There are but two tubercles in the dorsal row, one in front and one near the hind edge (of each segment) but the lateral

rows have three tubercles and are crowded together or almost crowded together and the rows a little irregular."

I have seen no specimens.

STYRAXODESMUS ATER new species

Plate 3, Fig. 9

Two males, one the type, and 3 females collected on the Ile de Cabrit, near Bayeux, June 13, 1927. L. Other males collected at Diquini, near Port au Prince; Cabaret between Port au Prince and La Arcahaie; and at Ennery, 1927, C. & L. Between Leogane and Petit Goave, May 21, 1925. C. Type in U. S. N. M. Paratype in M. C. Z.

Diagnosis. This species differs from *S. furcatus* in the darker color; in having each of the four crests of segment 2 to segment 19 inclusive with only 2 tubercles.

Description. Size near *S. furcatus*, between 4 and 5 mm. long.

Head black to below the base of the antennae below which it is yellowish-white; antennae yellowish-white throughout. First segment black. Ensuing segments with the anterior subsegments yellowish-white above and below; the posterior subsegments black above and below, even to the base of the legs, the extremely narrow sterna also black. Anal valves, preanal scale and all joints of the legs yellowish-white.

Antennae with the fifth joint wider and fully twice as long as either the fourth or the sixth joint.

First segment as in *S. furcatus*. Other segments with 4 rows of dorsal tubercles but only 2 tubercles in these rows on each segment; inner row of tubercles on the posterior segments forming prominent crests and projecting backward on segments 18 and 19, the crests of segment 19 projecting backward nearly as far as the apex of the last segment; between the base of the keel and the outer row of tubercles on each segment a small round tubercle is usually present.

Last segment truncate or slightly retuse, with 2 distinct tubercles on each side.

Sterna very narrow, scarcely separating the legs; the sternum between the legs following the gonopods no wider than the other sterna.

DILOPHOPS Loomis

DILOPHOPS BULLATUS Loomis

Dilophops bullatus Loomis, Smiths. Misc. Coll., **89**, no. 14, pp. 59-62, 1934.

The type locality is Bayeux, but specimens also have been collected on Morne Pilboreau. The writer found a single specimen in the island of St. Kitts, in 1932.

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EXPLANATION OF PLATES

PLATE 1

PLATE 1

- Fig. 1. *Prostemmiulus cognatus*, female, dorsal view. X 4.4.
Fig. 2. *Rhinocricus lethifer*, male, ventral view. X 0.9.
Fig. 3. *Rhinocricus lethifer*, female, dorsal view. X 0.9.
Fig. 4. *Quisquicia scitula*, female, dorsal view. X 4.4.
Fig. 5. *Cyrtaphe alternata*, head and first seven segments of male, ventral view. X4.

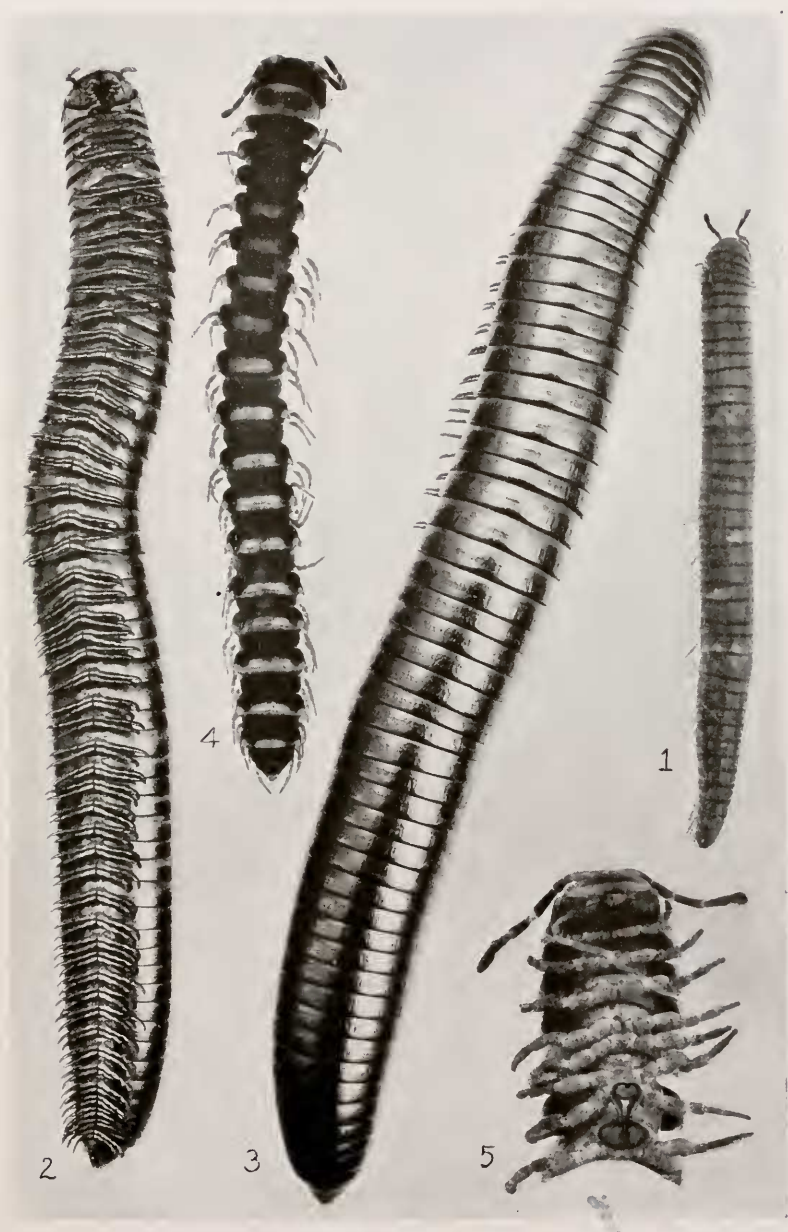


PLATE 2

PLATE 2

- Fig. 1. *Cyrtaphe alternata*, male, dorsal view. X 4.
Fig. 2. *Chondrotropis pictus*, male, dorsal view. X 4.
Fig. 3. *Chondrotropis venustus*, female, dorsal view. X 4.

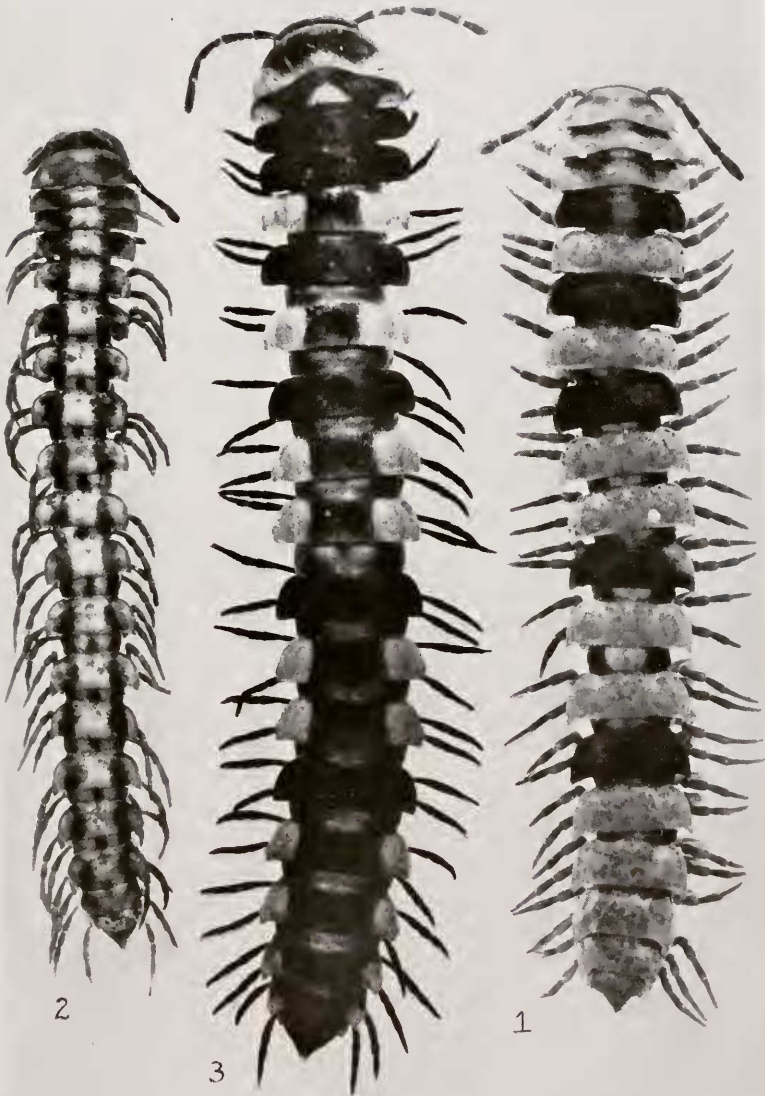


PLATE 3

PLATE 3

- Fig. 1. *Cyclodesmus incisus*, male, ventral view. X 11.6.
- Fig. 2. *Cyclodesmus incisus*, female, lateral view. X 11.6.
- Fig. 3. *Docodesmus parvior*, female, dorsal view. X 8.9.
- Fig. 4. *Coccoelasma incisura*, female, dorsal view. X 11.6.
- Fig. 5. *Eoromus aberrans*, male, dorsal view. X 8.9.
- Fig. 6. *Eoromus aberrans*, female, oblique lateral view. X 8.9.
- Fig. 7. *Cynedesmus varilobatus*, female, dorsal view. X 11.6.
- Fig. 8. *Lophodesmus caraibianus*, female, dorsal view. X 11.6.
- Fig. 9. *Styraxodesmus ater*, female, dorsal view. X 11.6.

